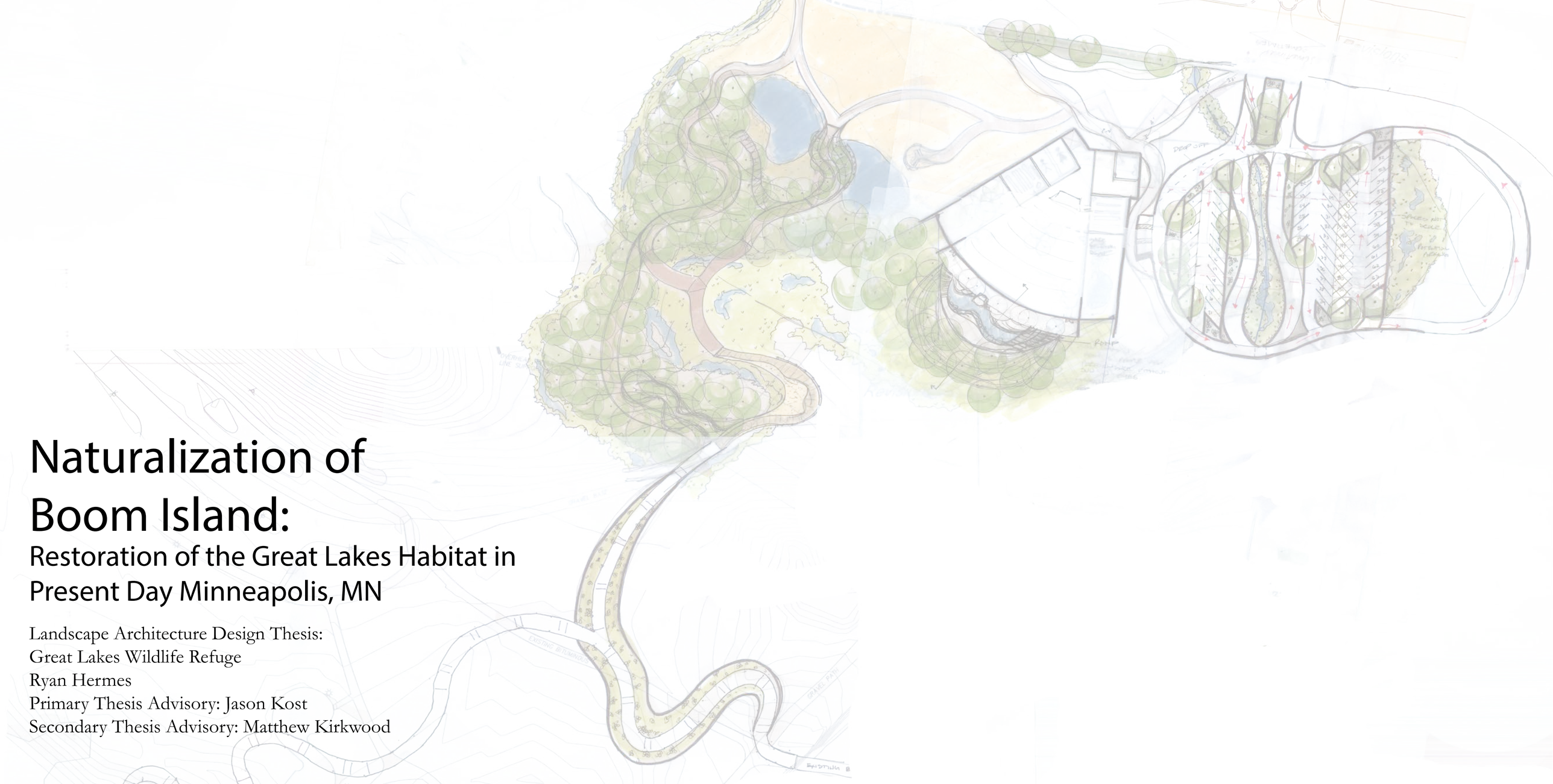
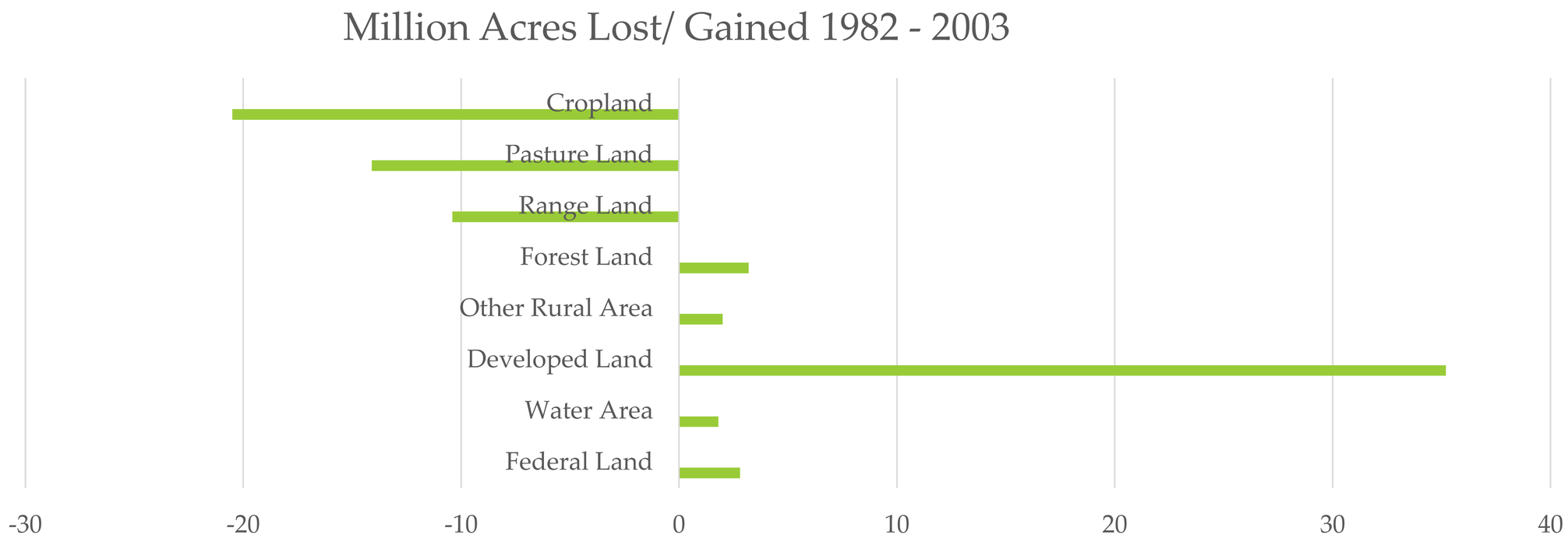


Naturalization of Boom Island:

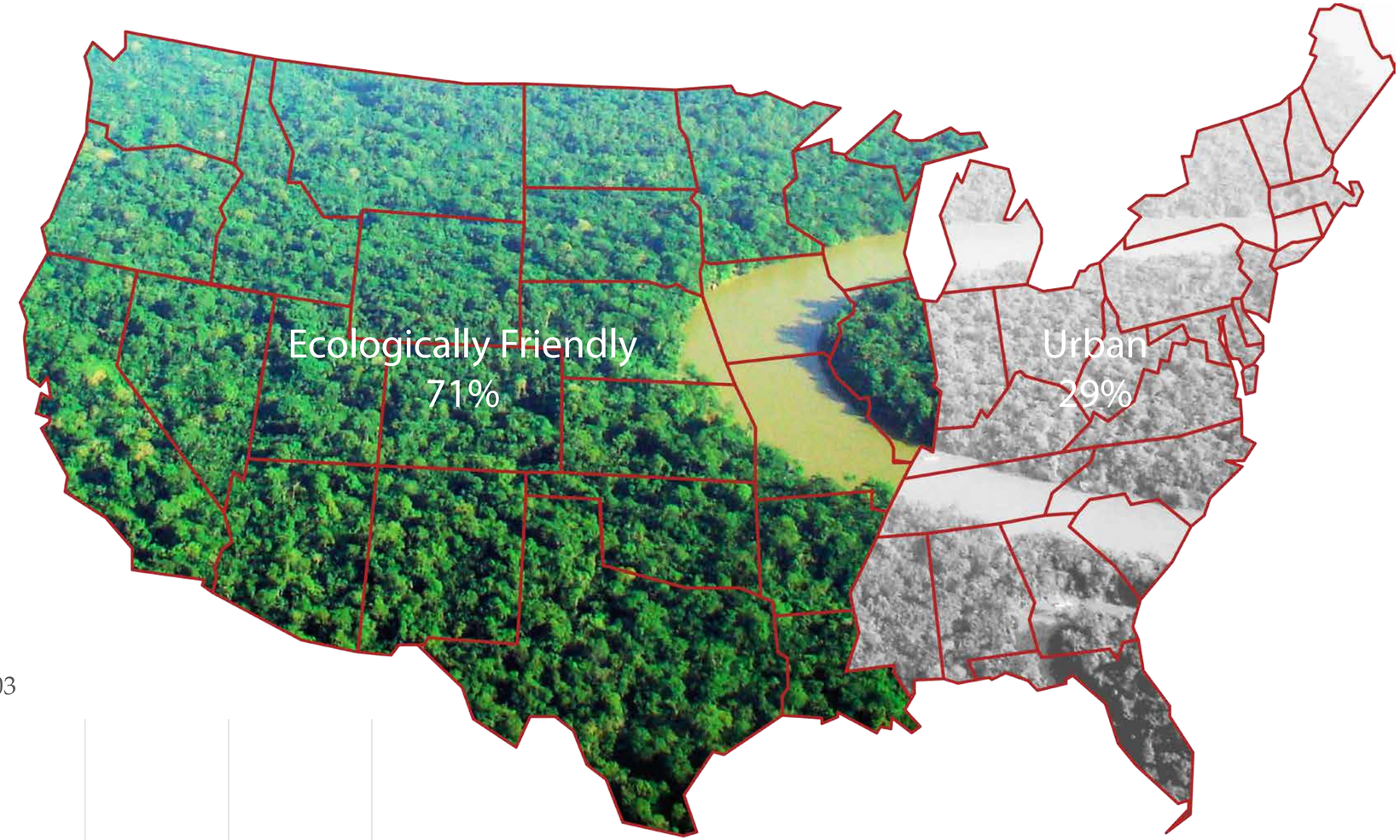
Restoration of the Great Lakes Habitat in Present Day Minneapolis, MN

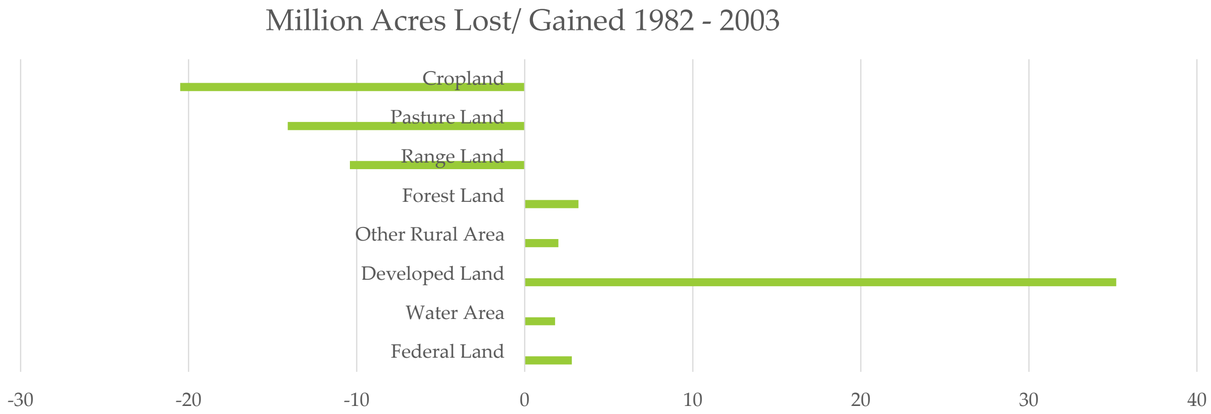
Landscape Architecture Design Thesis:
Great Lakes Wildlife Refuge
Ryan Hermes
Primary Thesis Advisory: Jason Kost
Secondary Thesis Advisory: Matthew Kirkwood

Reasoning

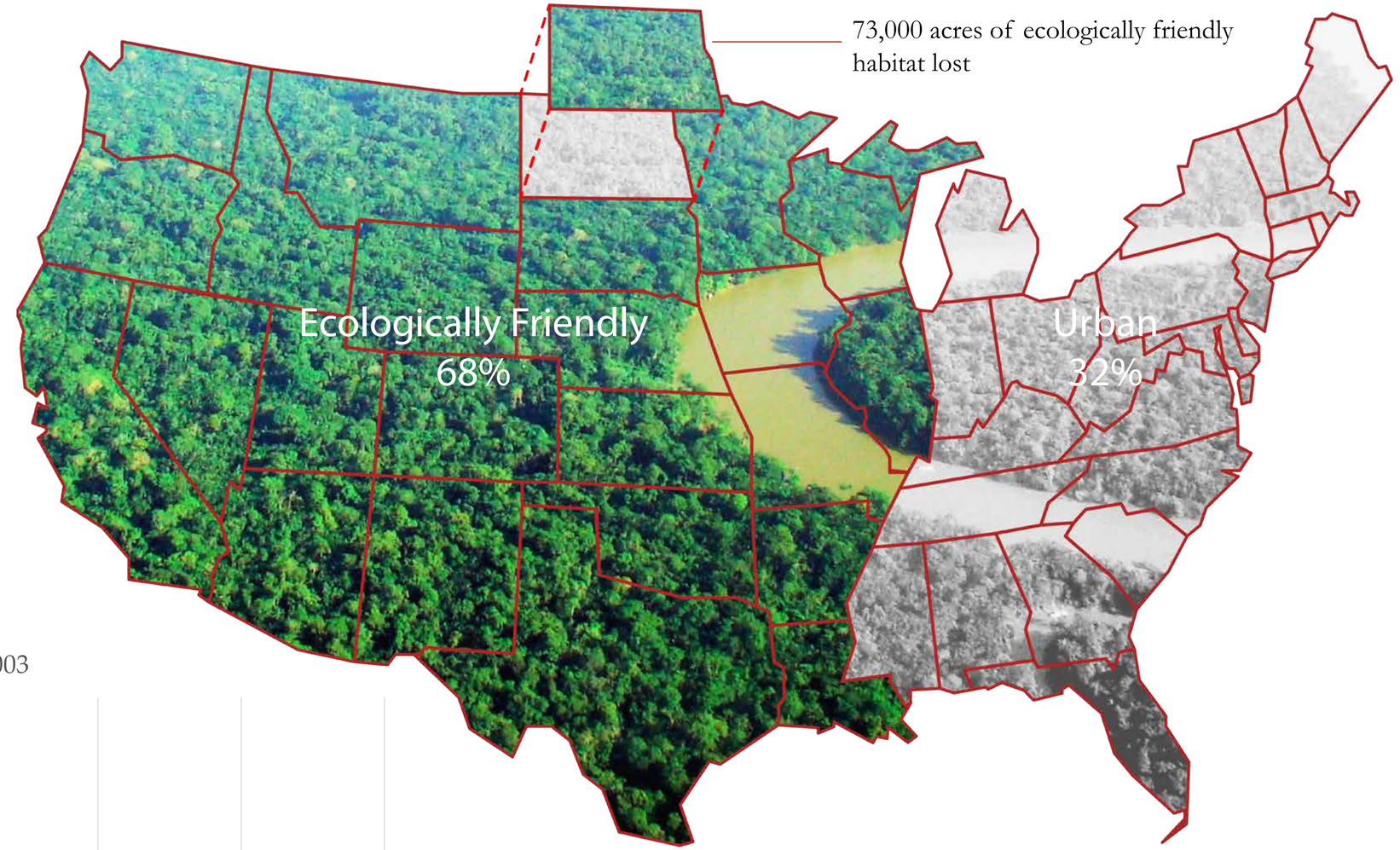

Million Acres Lost/ Gained 1982 - 2003
Cropland
Pasture Land
Range Land
Forest Land
Other Rural Area
Developed Land
Water Area
Federal Land
-30
-20
-10
0
10
20
30
40

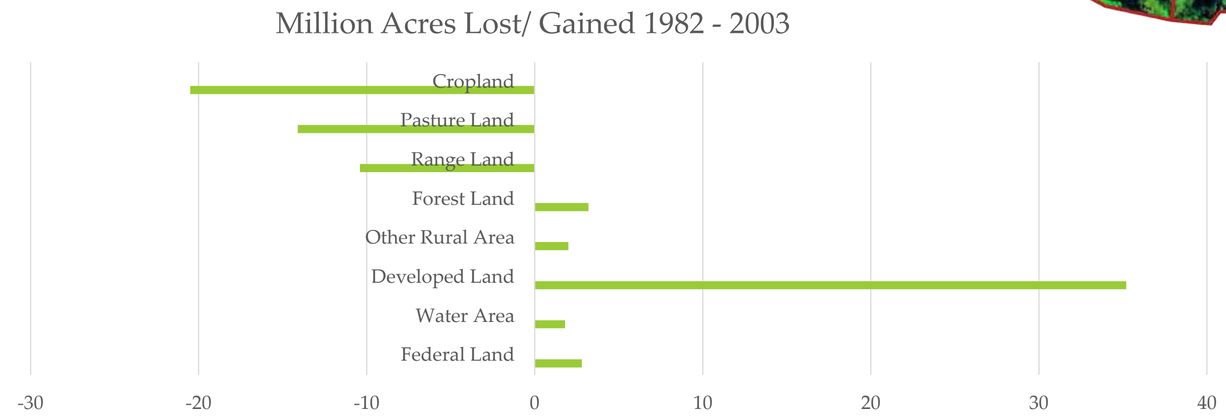
Cause | Habitat Degradation





Cause | Habitat Degradation





Saint Anthony Falls Today

Saint Anthony Falls 19th Century

Javan Tiger

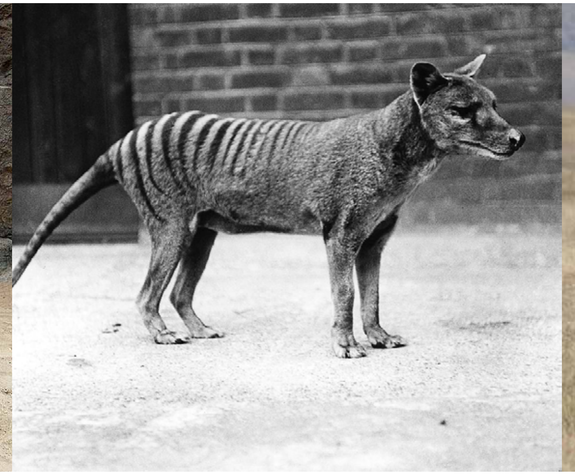
Carribean Monk Seal

Chinese River Dolphin

Golden Toad

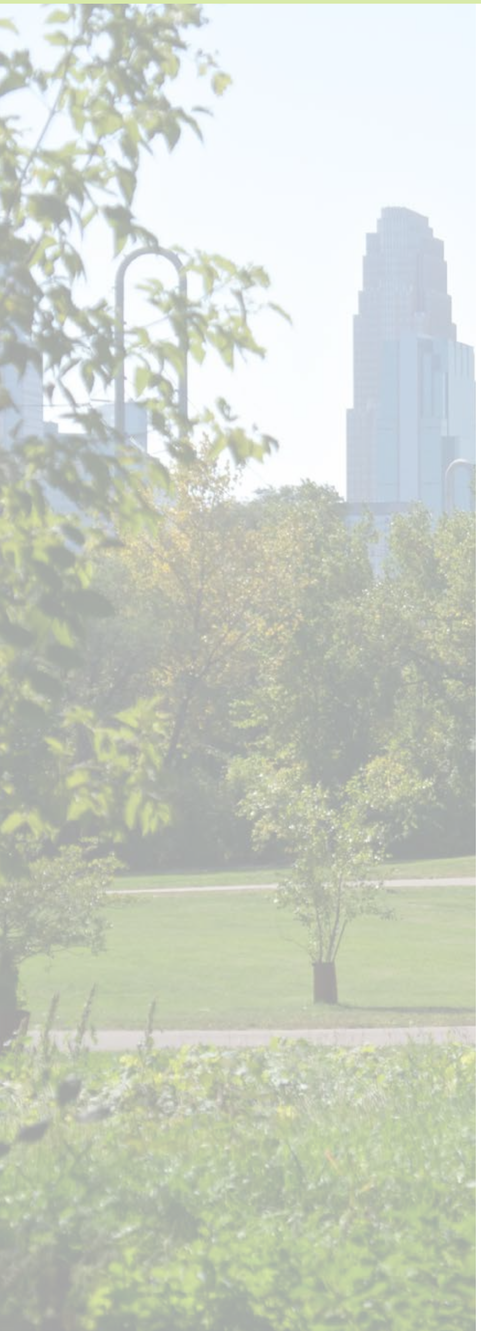
Pyrenean Ibex

Galapagos Tortoise



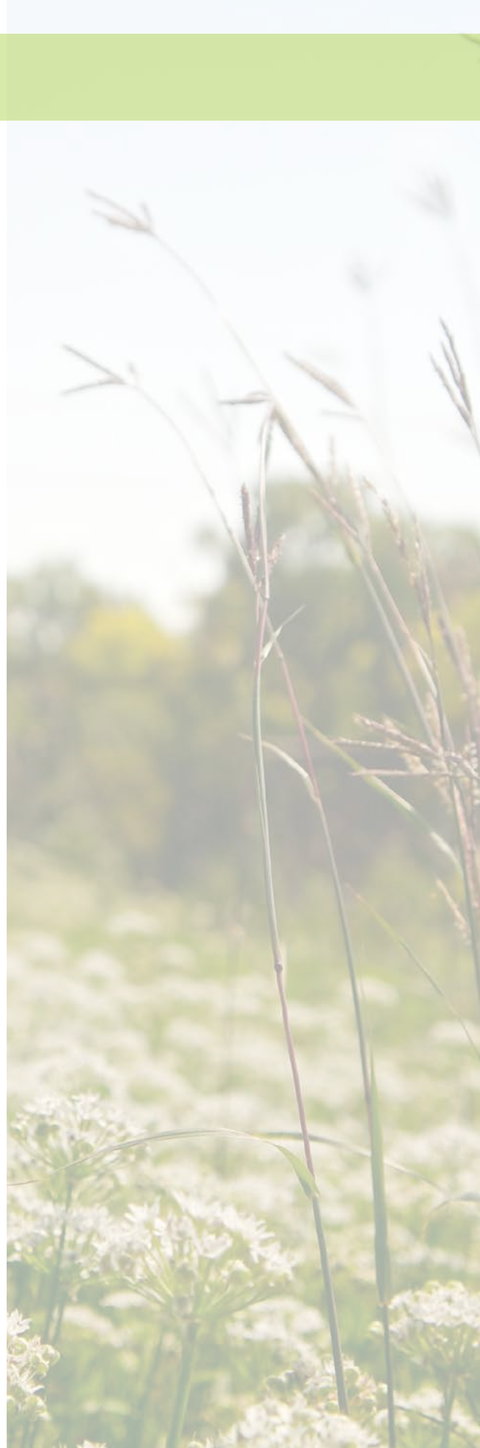
Tasmanian Tiger

West African Black Rhino

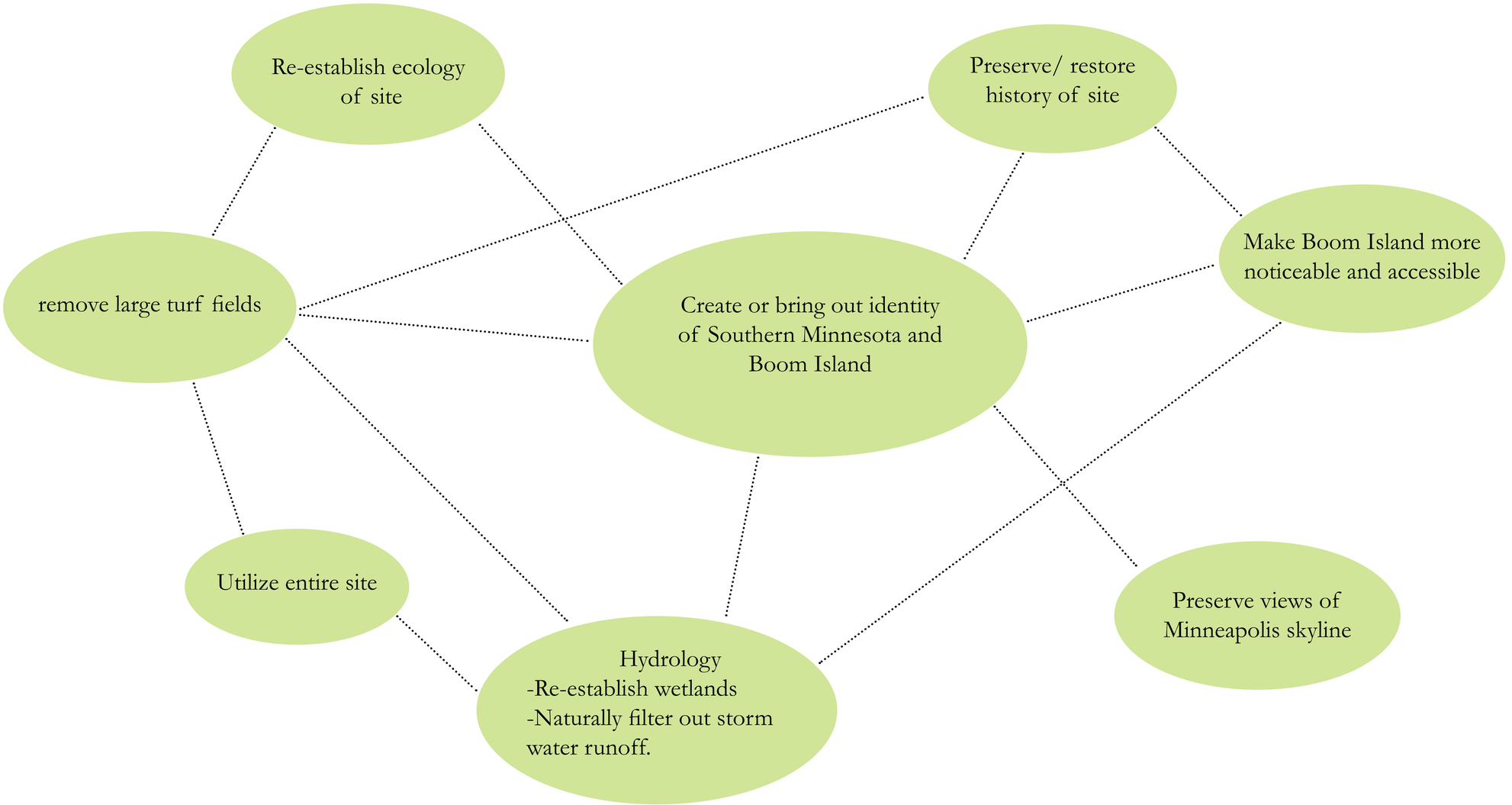


Due to habitat loss and degradation, I propose to re-establish the ecosystems of pre-existing Boom Island, Minneapolis, Minnesota giving native flora and fauna a place to refuge where people and nature can coexist.

With the growing degradation of wildlife habitats due to human development, we are currently in the largest extinction period since the dinosaur age. Great Lakes Wildlife Refuge is designed to create a naturalistic environment for both native endangered and common flora and fauna. This project looks to create an environment for visitors to immerse themselves in while having the least amount of disruption to wildlife that have made Great Lakes Wildlife Refuge their home.



Thesis | Goals



If more area is naturalized, more habitat is created, increasing native flora and fauna population.

The build and natural environment will coexist.

Creating a naturalistic environment near a highly populated area will increase awareness of the negative environmental impacts happening in todays ecosystems by allowing the public to immerse themselves in the site, improving ecotourism.

When the site contrasts the city is lives in, it creates more curiosity and invites more visitors.

Case Study

Case Study | Cheonggyecheon Stream Restoration Project

Project Name: Cheonggyecheon Stream Restoration Project

Location: Cheonggyecheon Stream Seoul, South Korea between Sejong Daero and Naebu Ring way.

Cost: $120 Million

Size: 100 acres

Landscape Architect: SeoAhn Total Landscape

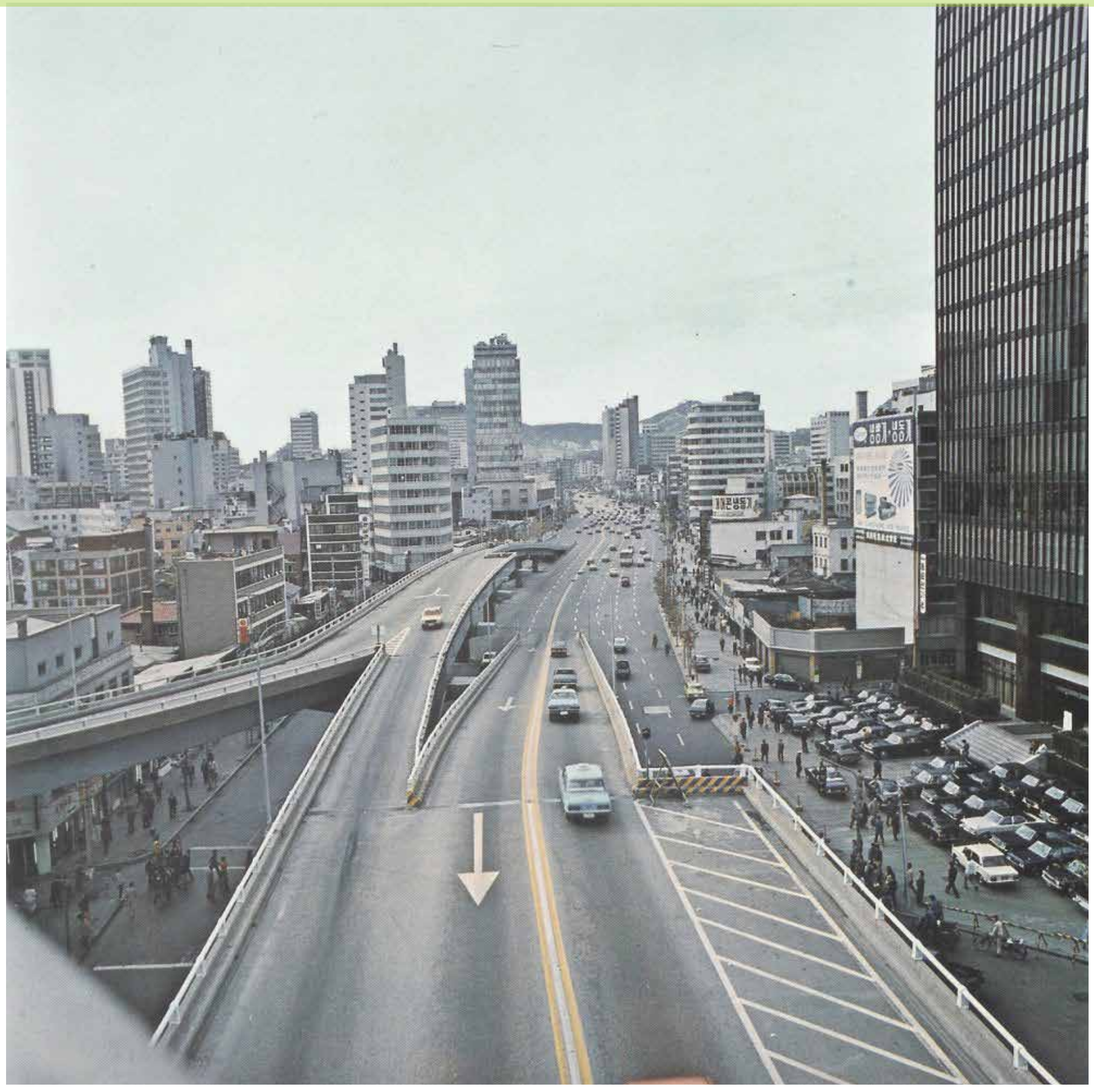
Context: Metropolitan, Downtown South Korea

Environmental Impact:
Increased biodiversity by 639%
Plants: 62 to 308
Fish: 4 to 25
Birds: 6 to 36
Aquatic invertebrate: 5 to 53
Insects: 15 to 192
Mammals: 2 to 4
Amphibians: 4 to 8

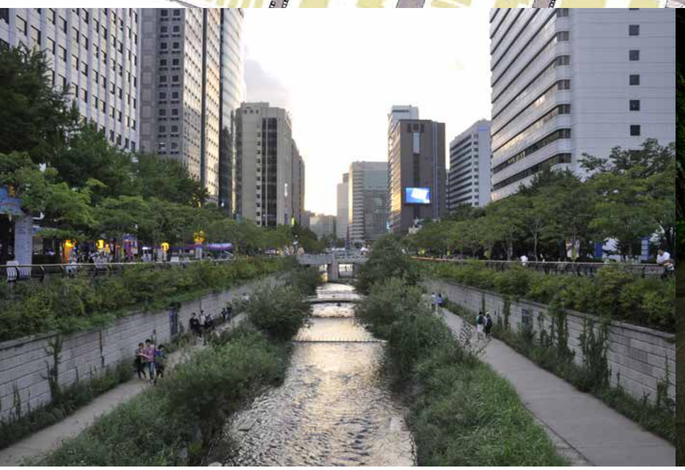
Typology:
- Natural Restoration
- Historical Preservation
- Urban Planning
- Park/ Open Space

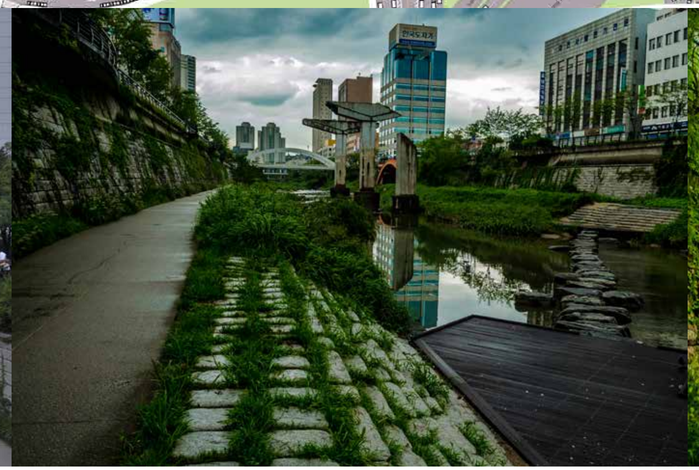
Problem:
- Elevated freeway created a safety hazard and disconnect throughout the city.
- Old stream was rerouted in order to build initial freeway.
- Worried removing freeway would create congestion on arterial roads.

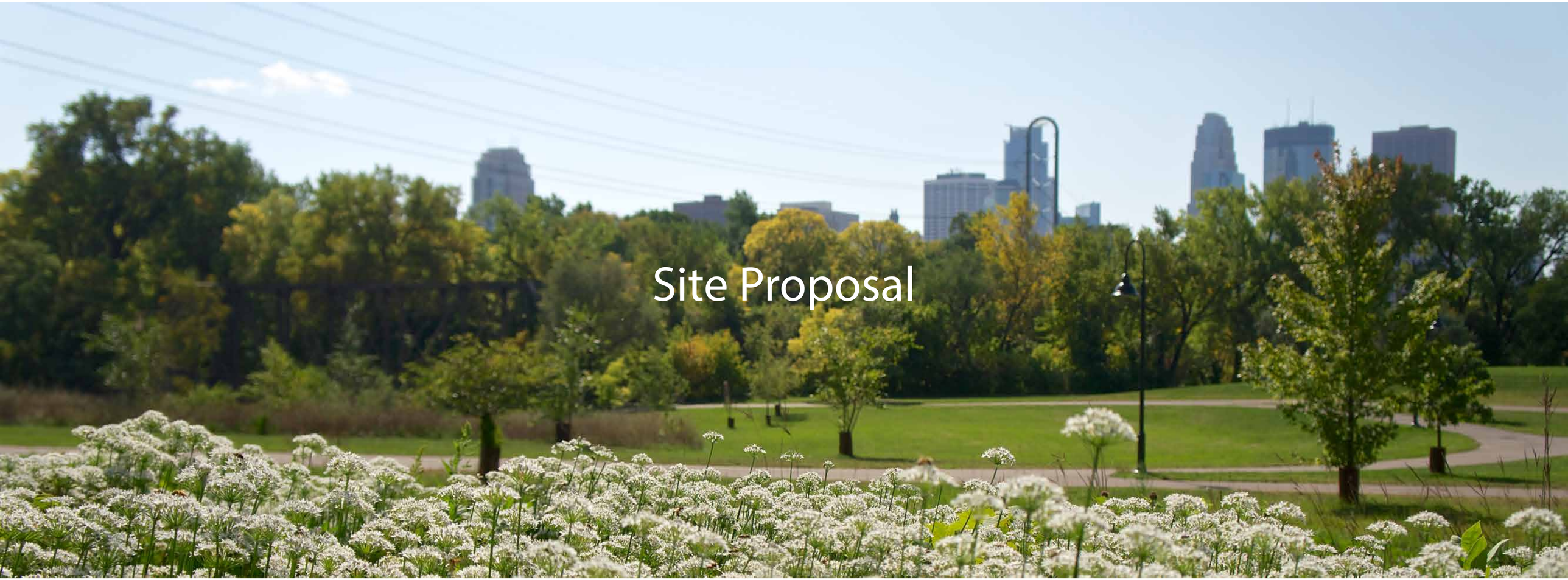
Solution:
- Stream was reintroduced creating a more ecologically friendly park bringing more visitors to the site since it is one of the only types of parks of its kind.
- Construct 22 bridges in order to reduce congestion.
- Visitors to site brought more shoppers boosting economy and increasing “eyes on the streets” reducing crime.



Case Study | Cheonggyecheon Stream Restoration Project

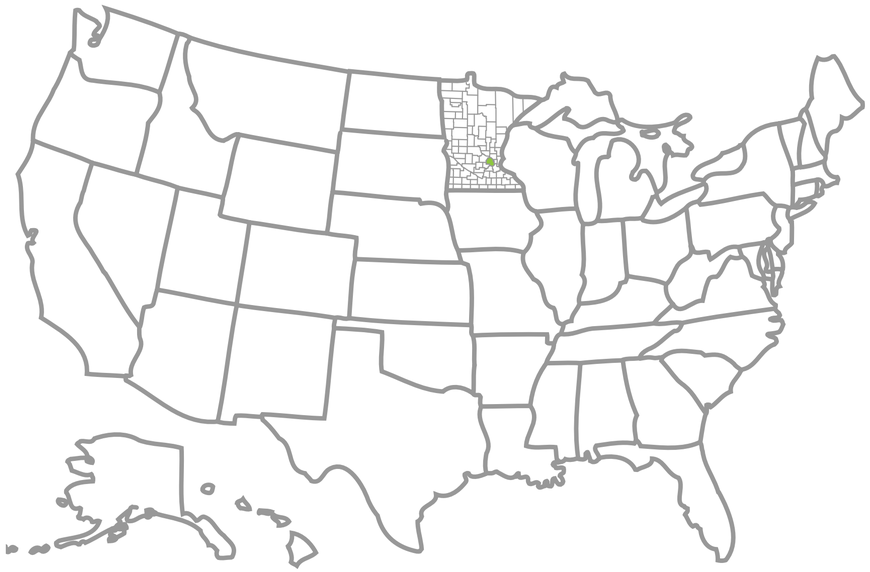




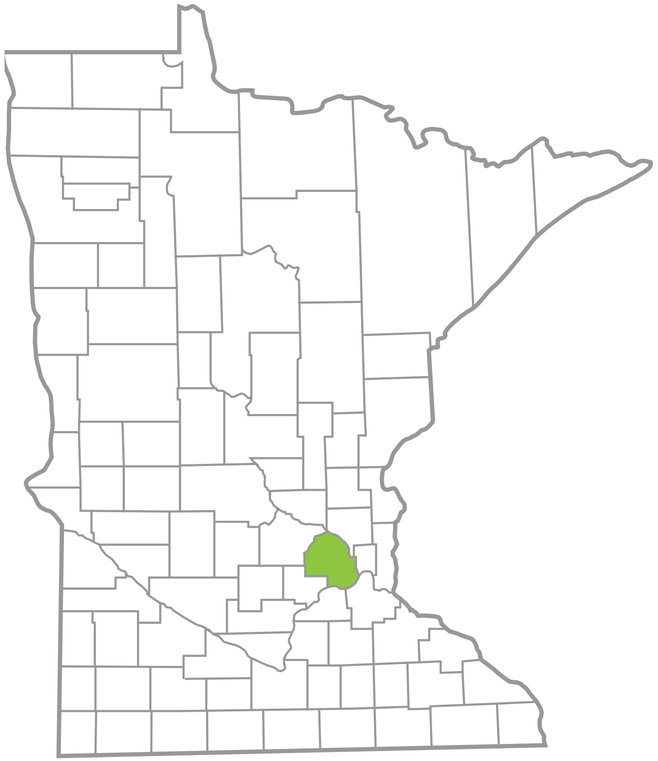


Site Proposal

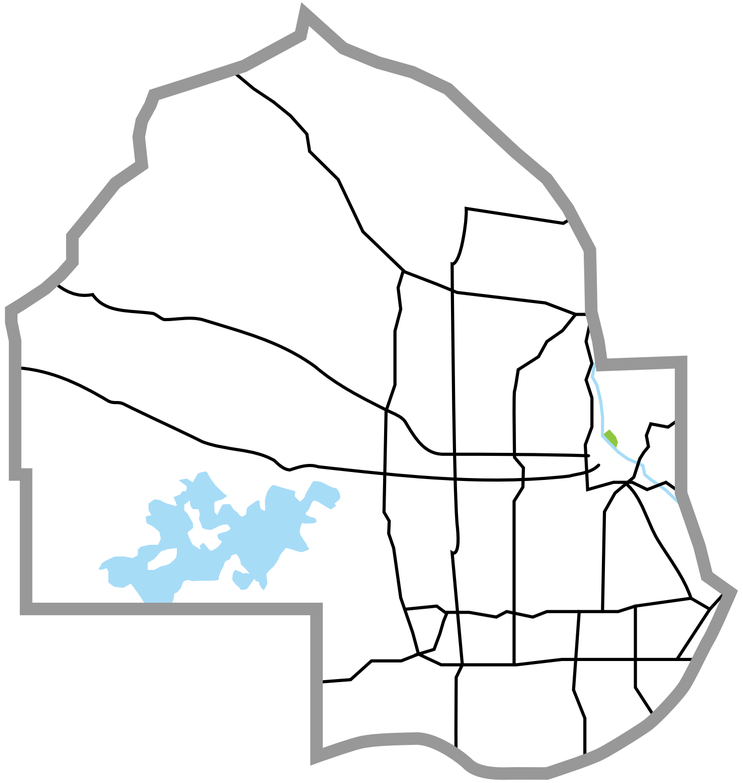
United States



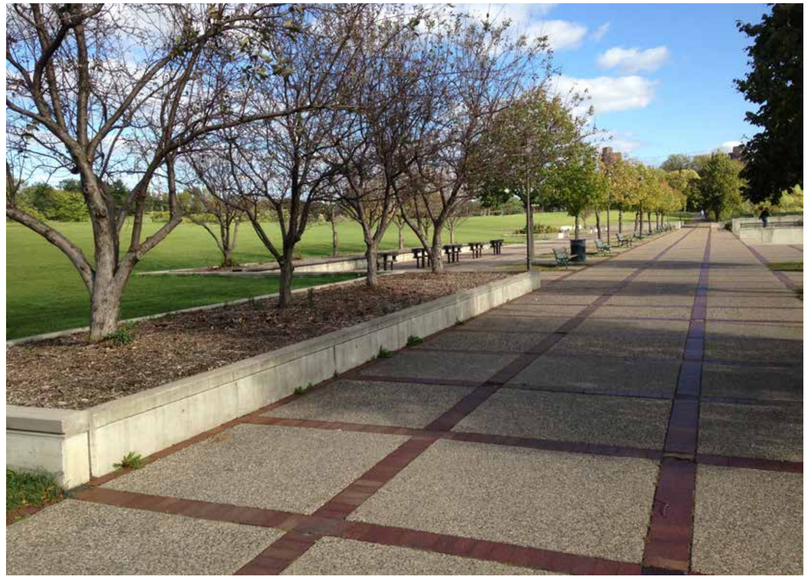
Minnesota



Hennepin County




Plymouth Ave N
8th Ave NE
Marshall St. NE
6th Ave NE
Main St. NE
W River Pkwy.
Nicollet Island
Light Rail
Light Rail
Hennepin Ave
N Washington Ave
Downtown Minneapolis
Central Ave SE
SE Main St.
Mississippi River



Built: 1988

Landscape Architect: Ted Wirt

Size: 22.5 Acres

Location: One mile North of Downtown Minneapolis directly across the Mississippi River.

Uses: Boom Island is currently used primarily for biking, walking, and segway tours. On site there are two plazas designed by Ted Wirt that are used frequently for weddings and other large events. The Mississippi Queen is a large passenger boat that runs on a daily basis for tours and transportation.

Site Proposal | Limitations

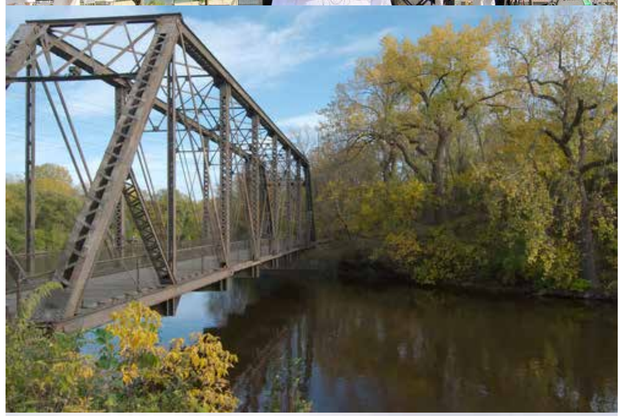
Mississippi Queen tours create a lot of congestion in short periods of time from passengers boarding and leaving the tour.

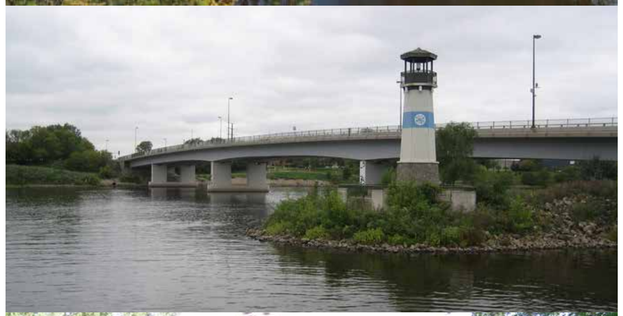
No “eyes on the streets”. With Boom Island being located next to a residential zone, there is not a lot of activity at night, making the site potentially dangerous at night.

Not directly located downtown, so knowledge of the sites existence is limited.

One entrance to site currently making it difficult to get to.

Site Proposal | Strengths





Surrounded by a large metropolitan area helping to show how the habitat re-establishment can be successful with congestion around it.

A flat site allowing for the re-establishment of wetlands

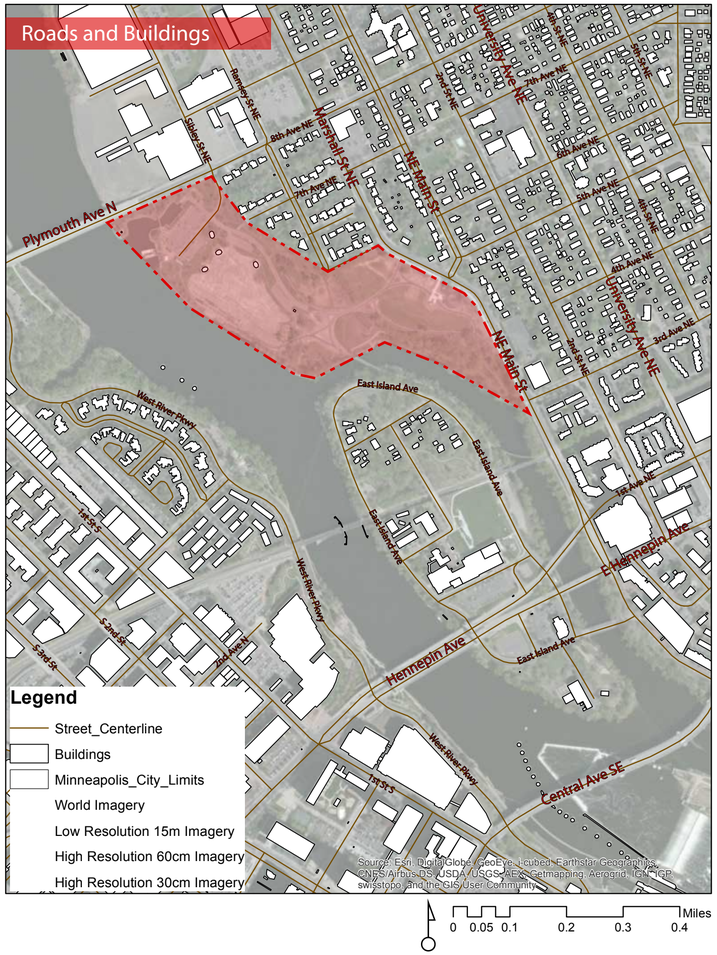
Site allows for a large amount of ecological biodiversity.

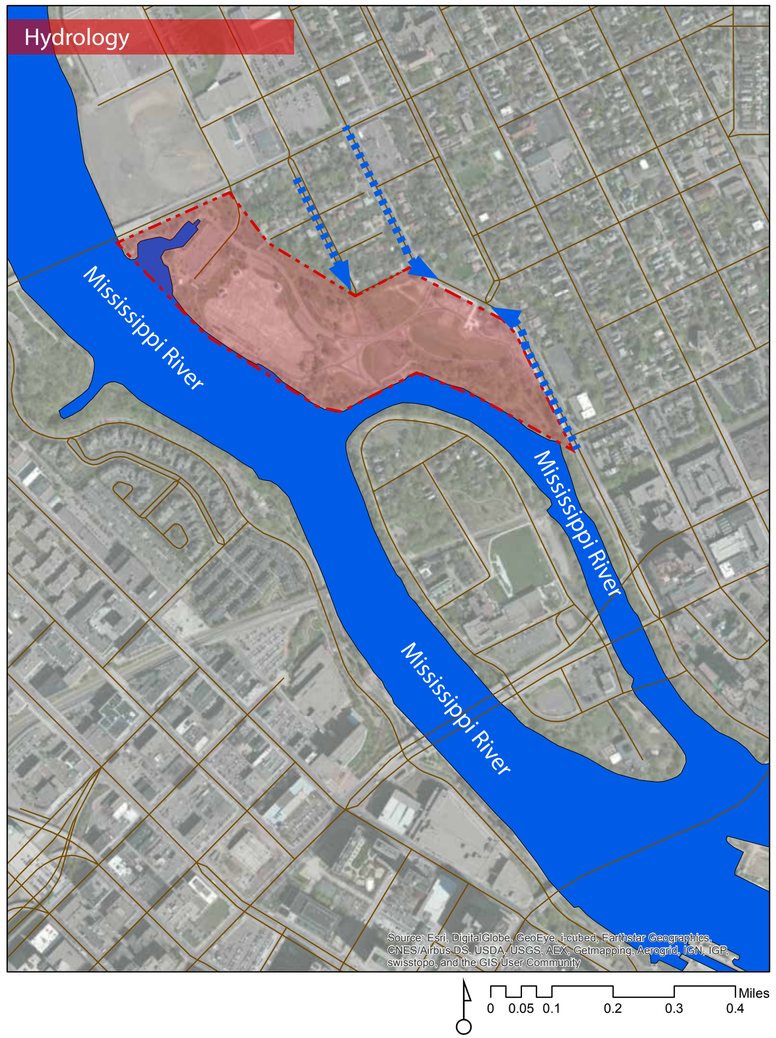
One mile from central Minneapolis and Downtown West, bringing a diversity of users to the site. This allows the new proposal to work at its fullest potential educating people as they proceed through the park.

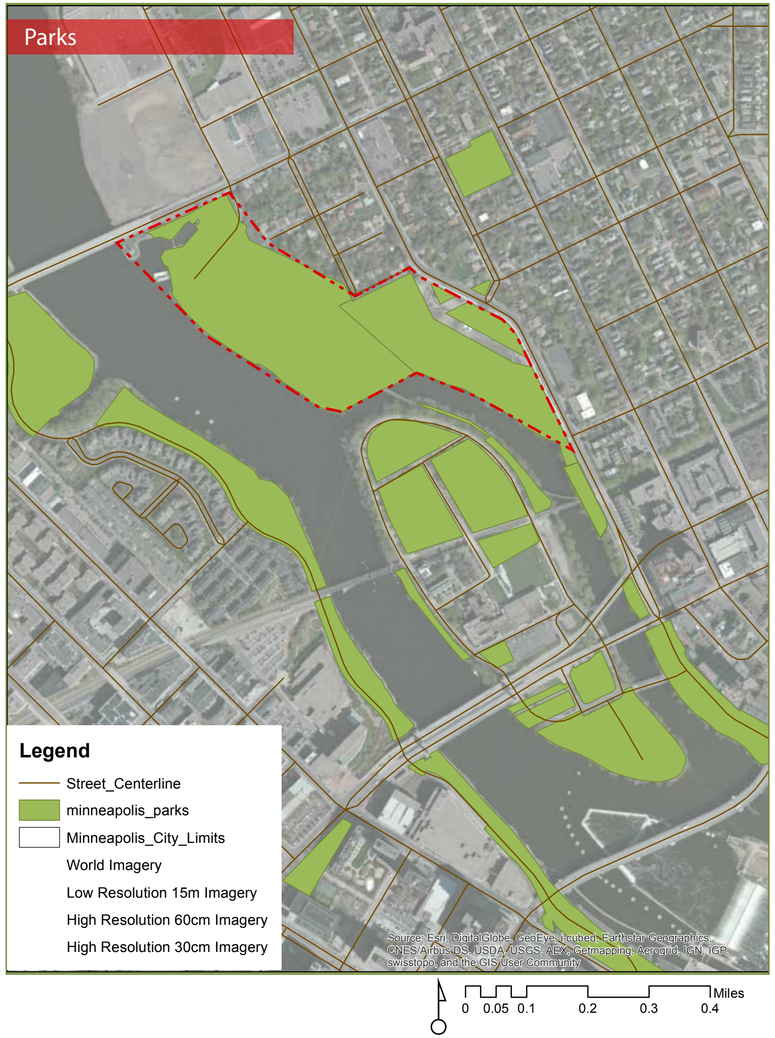
Connected to a large chain of riverfront forested areas serving as a habitat corridor.

Inventory


Neighborhoods
St. Anthony East
St. Anthony West
Near - North
North Loop
Nicollet Island - East Bank
Marcy Holmes
Downtown West
Downtown East
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
0 0.05 0.1 0.2 0.3 0.4
Miles


Roads and Buildings
Plymouth Ave N
NE Main St
University Ave NE
Hennepin Ave
Central Ave SE
East Island Ave
West River Pkwy
Legend
Street_Centerline
Buildings
Minneapolis_City_Limits
World Imagery
Low Resolution 15m Imagery
High Resolution 60cm Imagery
High Resolution 30cm Imagery
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
0 0.05 0.1 0.2 0.3 0.4
Miles


Hydrology
Mississippi River
Mississippi River
Mississippi River
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
0 0.05 0.1 0.2 0.3 0.4
Miles


Parks
Legend
Street_Centerline
minneapolis_parks
Minneapolis_City_Limits
World Imagery
Low Resolution 15m Imagery
High Resolution 60cm Imagery
High Resolution 30cm Imagery
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
0 0.05 0.1 0.2 0.3 0.4
Miles

Mammals


Couger


Woodland Vole


Eastern Pip-istrelle


Elk


Least Weasel


Spotted Skunk


Smoky Shrew


Plains Pocket Mouse


Grey Wolf


North American Least Shrew


Northern Myotis


River Otter

Reptiles


Northern Cricket Frog


Bull Snake


American Hog Nosed Snake


Wood Turtle


Smooth Green Snake


North American Racer


Four Toed Salamader


Blandings Turtle


Western Ratsnake


Massasauga


Timber Rattle-snake


Snapping Turtle

Birds


Bald Eagle


Short Eared Owl


Trumpeter Swan

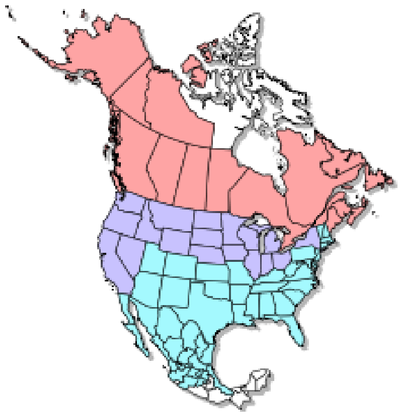
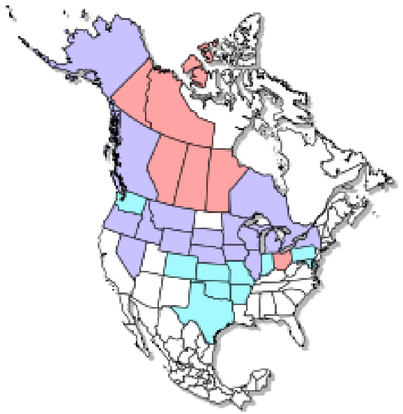
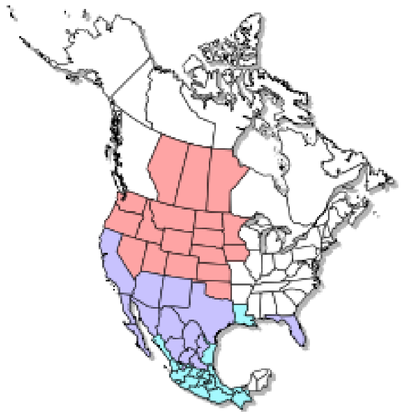

Burrowing Owl


Greater Prairie Chicken

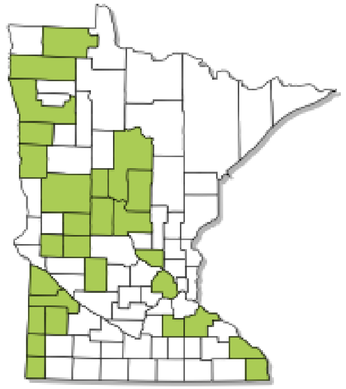
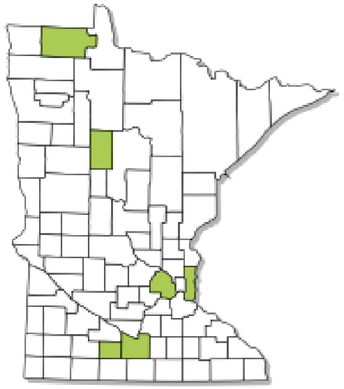
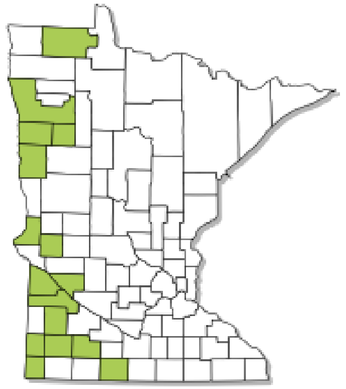
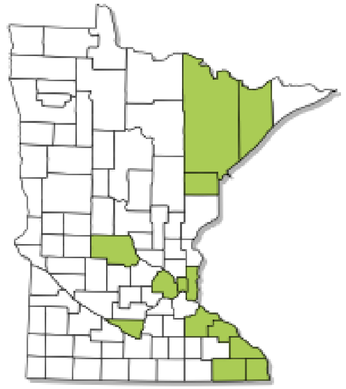
Fish


Lake Sturgeon

Migration Patterns

Breeding Grounds

Mammals


Couger


Woodland Vole


Eastern Pipistrelle


Elk


Least Weasel


Spotted Skunk


Smoky Shrew


Plains Pocket Mouse


Grey Wolf


North American Least Shrew


Northern Myotis


River Otter

Reptiles


Northern Cricket Frog


Bull Snake


American Hog Nosed Snake


Wood Turtle

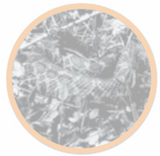

Smooth Green Snake


North American Racer


Four Toed Sala-mader


Blandings Turtle


Western Ratsnake


Massasauga


Timber Rattlesnake


Snapping Turtle

Birds


Bald Eagle


Short Eared Owl


Trumpeter Swan


Burrowing Owl


Greater Prairie Chicken

Fish


Lake Sturgeon

Wetland

Northern Cricket Frog

River Otter

Trumpeter Swan

North American Least Shrew

Blandings Turtle

Smoky Shrew

Meadow

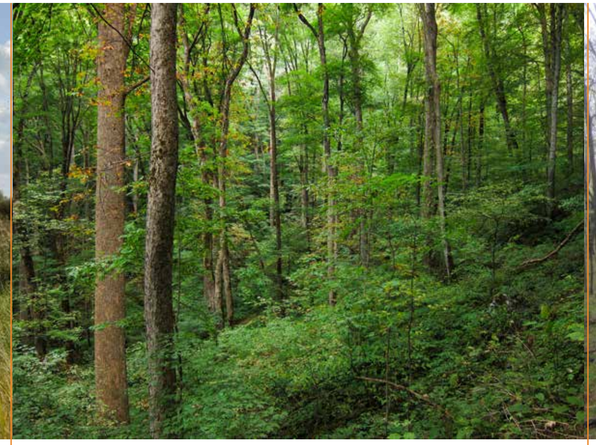
Woodland Vole

North American Least Shrew

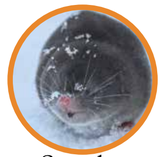
Plains Pocket Mouse

Least Weasel

Dense Hardwood Forest



Wood Turtle



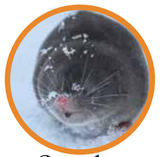
Smoky Shrew

Woodland Vole

Least Weasel

Open Hardwood Forest

Wood Turtle

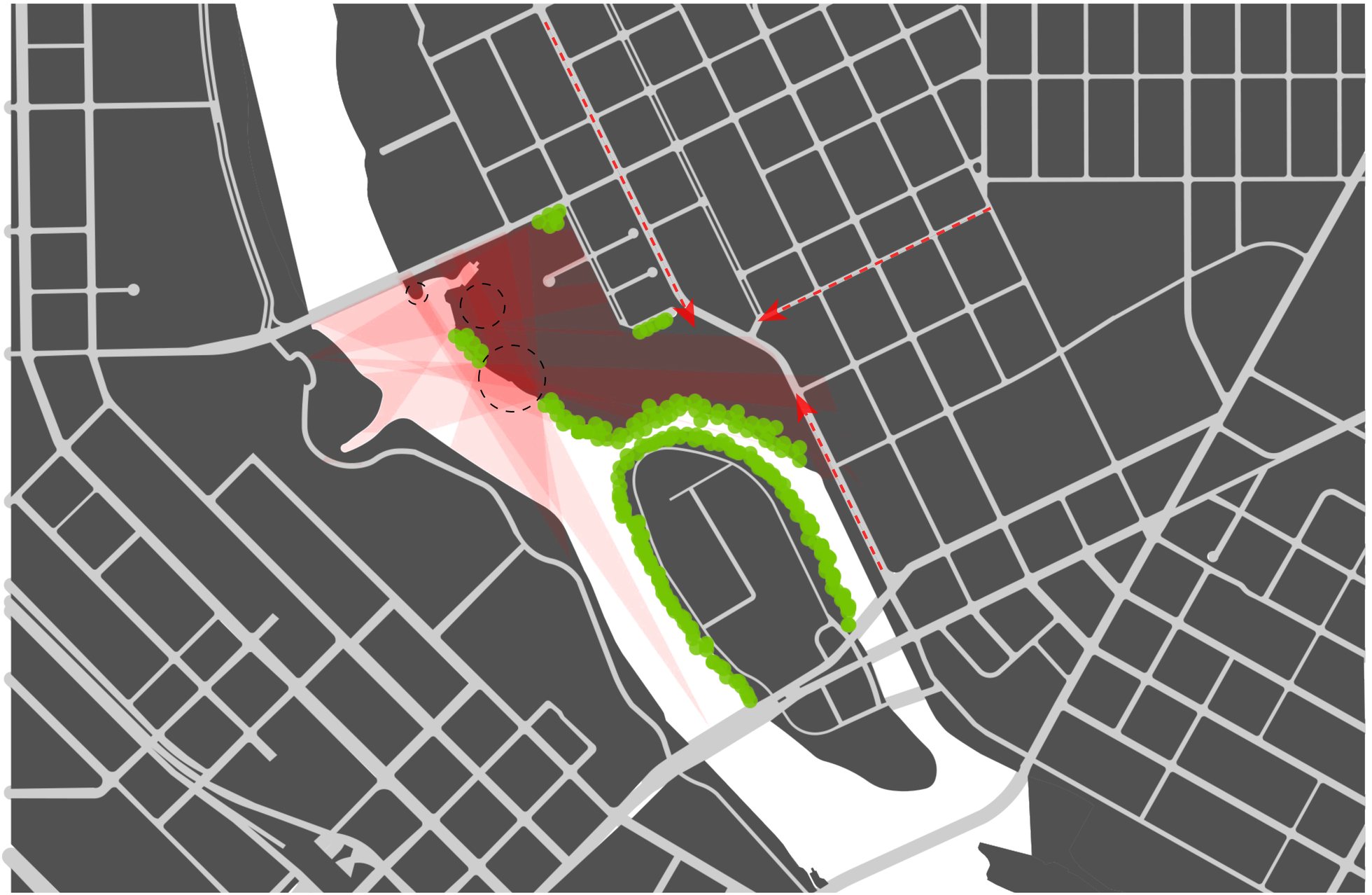


Smoky Shrew

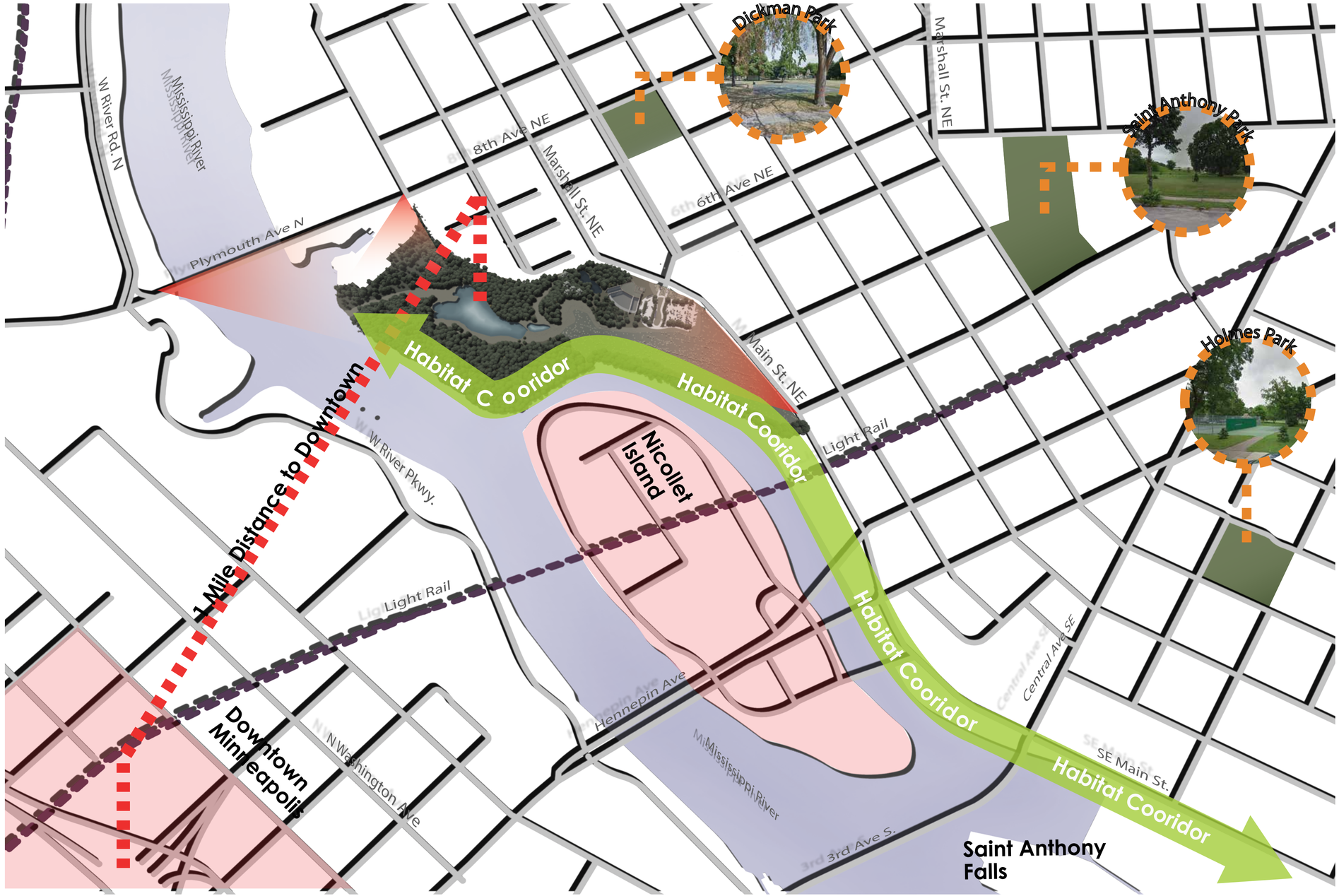
Woodland Vole

Least Weasel

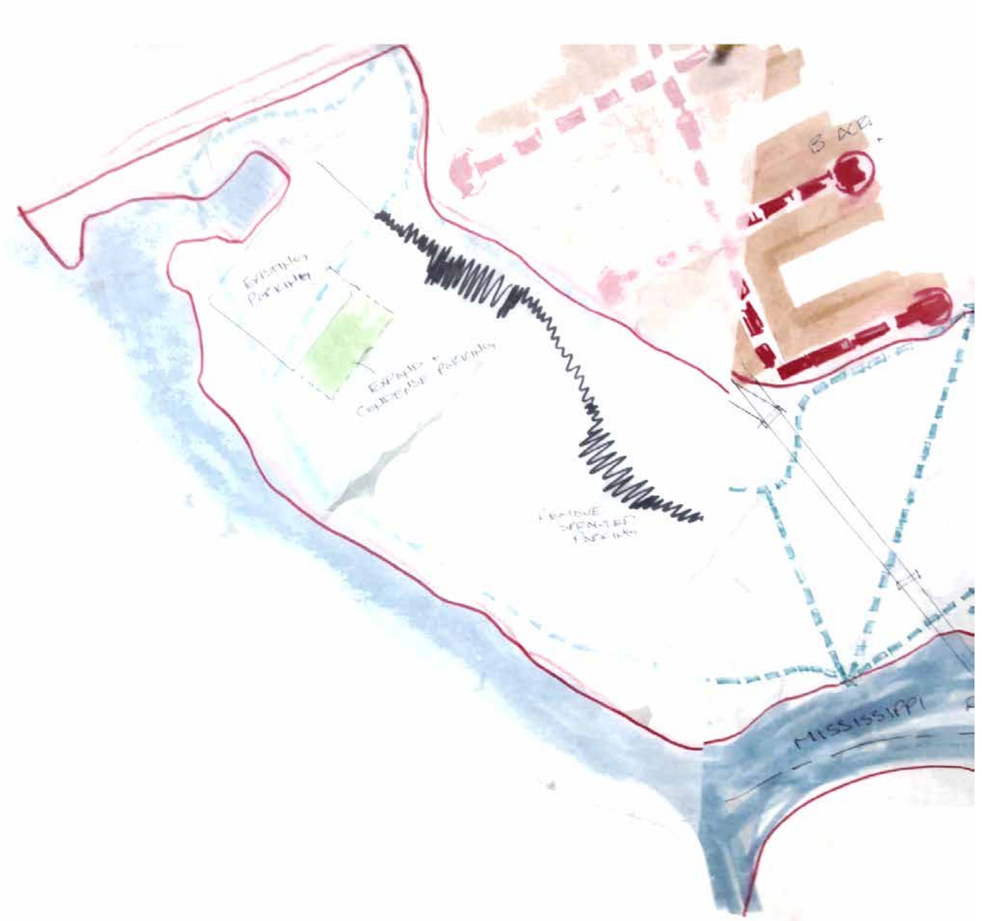
Analysis



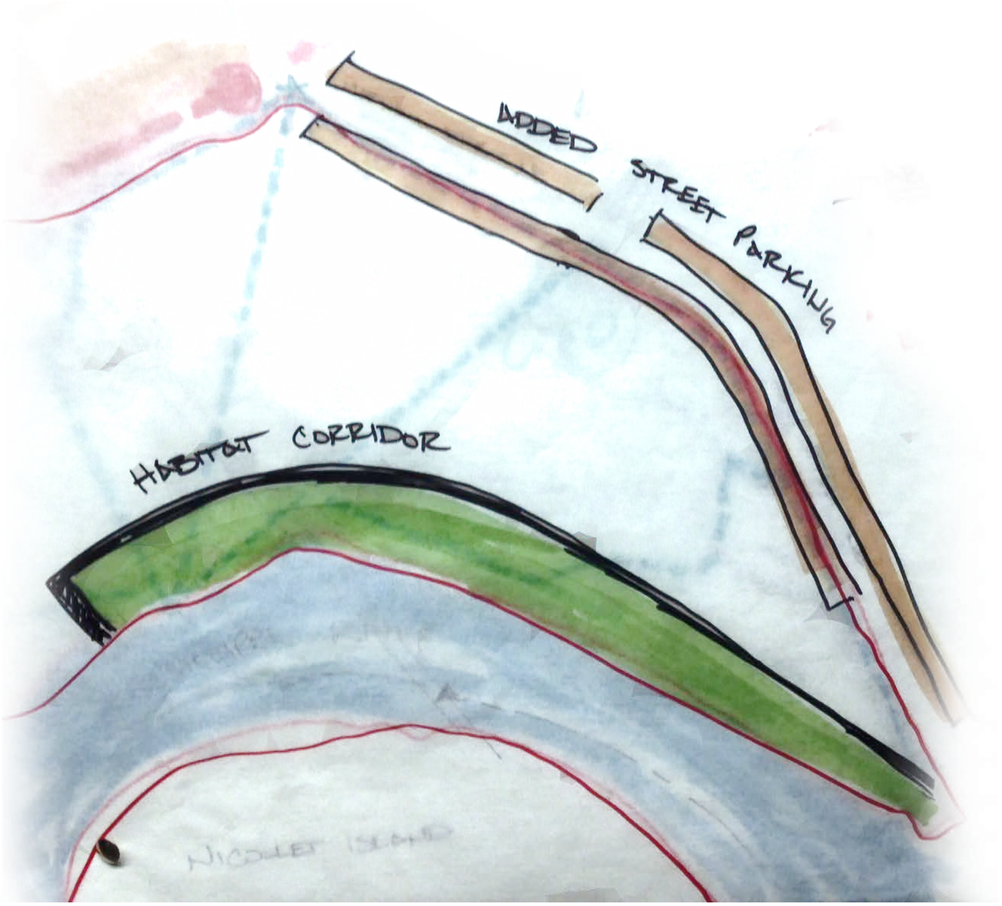
Analysis


Dickman Park
Saint Anthony Park
Holmes Park
Marshall St. NE
8th Ave NE
6th Ave NE
W River Rd. N
Mississippi River
Plymouth Ave N
Habitat Cooridor
Habitat Cooridor
Main St. NE
Light Rail
W River Pkwy.
Nicollet Island
1 Mile Distance to Downtown
Light Rail
Downtown Minneapolis
N Washington Ave
Hennepin Ave
Mississippi River
Habitat Cooridor
Central Ave SE
SE Main St.
Habitat Cooridor
3rd Ave S.
Saint Anthony Falls

Process

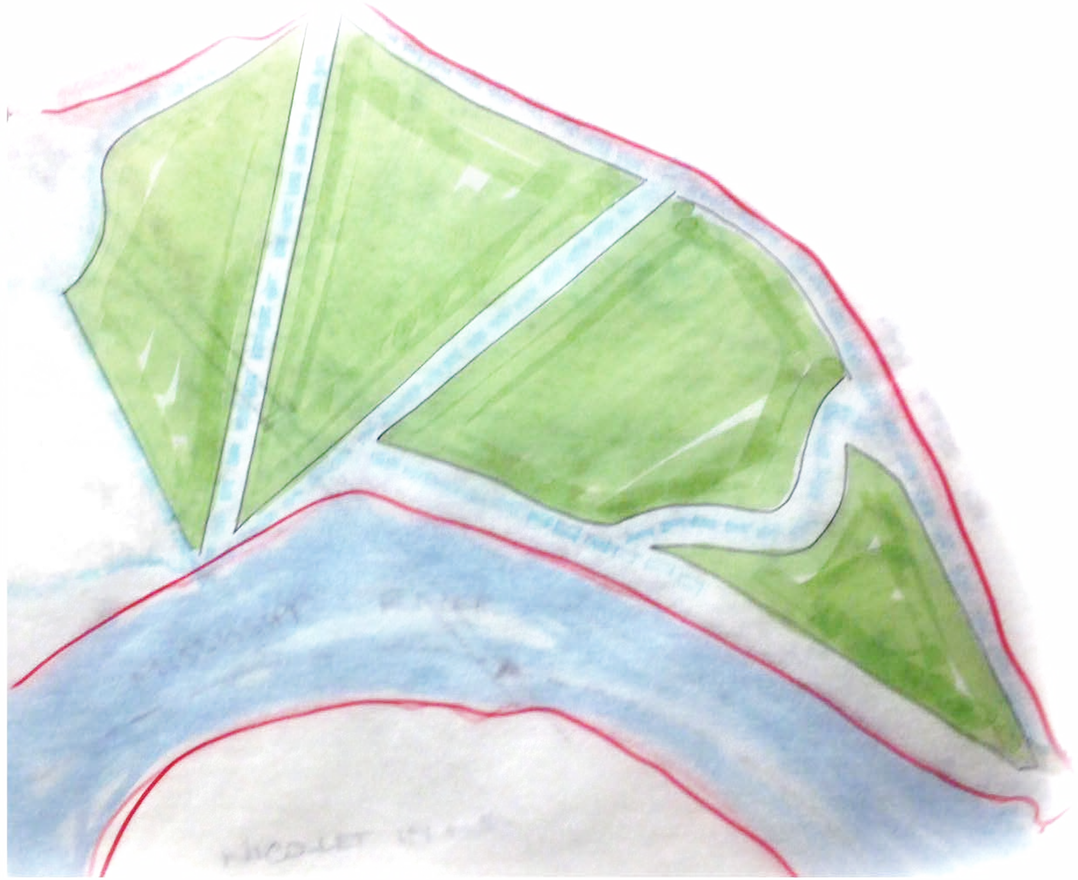


Parking sprawls into site. Remove this parking and make it up somewhere else.
Expand large parking lot and naturalize lot to blend in with the site.
This will condense parking and make more room for naturalization.

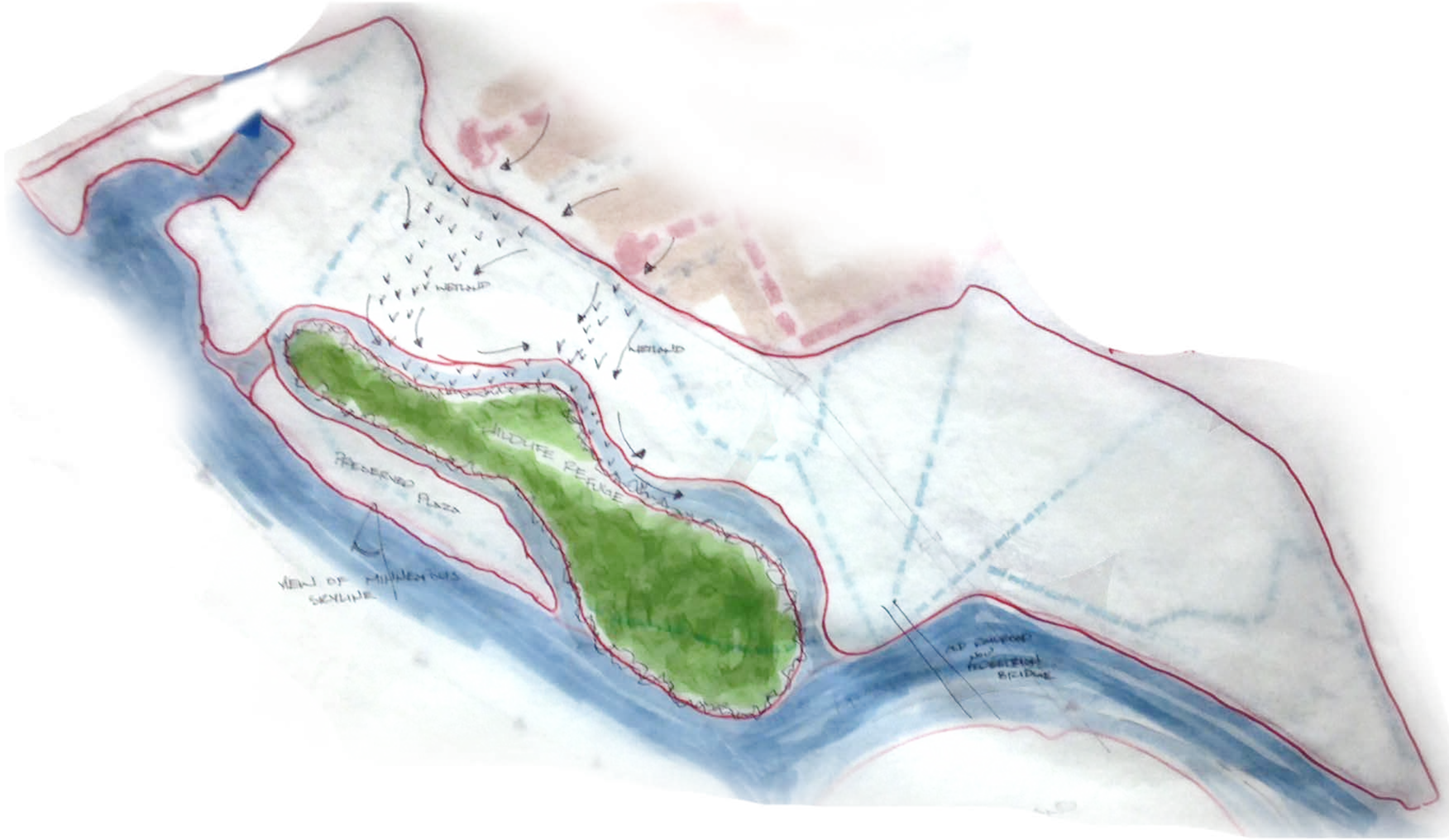


Added street parking takes some of the parking off site to create more habitat and help reduce noise pollution on site.
Could congest the road making people take a different route.

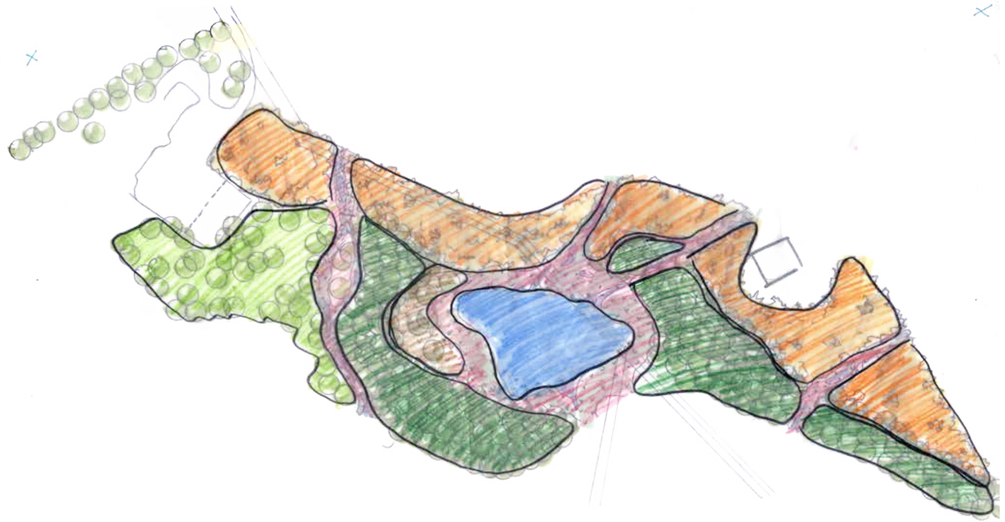
Habitat corridor allows wildlife to connect to other ecological zones.
Habitat corridor is cut off by existing historic pedestrian bridge.



Already has multiple pedestrian crossings.
Closest to major roads.
Potentially blocks habitat corridor.

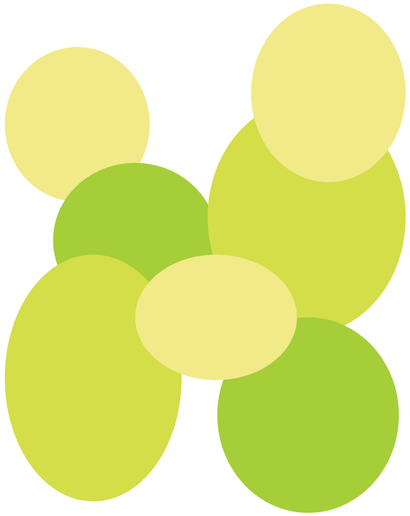


Restore Boom Island.
Create a buffer between wildlife refuge and human activity.
Create a wetland to filter and control storm water runoff from neighborhoods directly North and Main St.

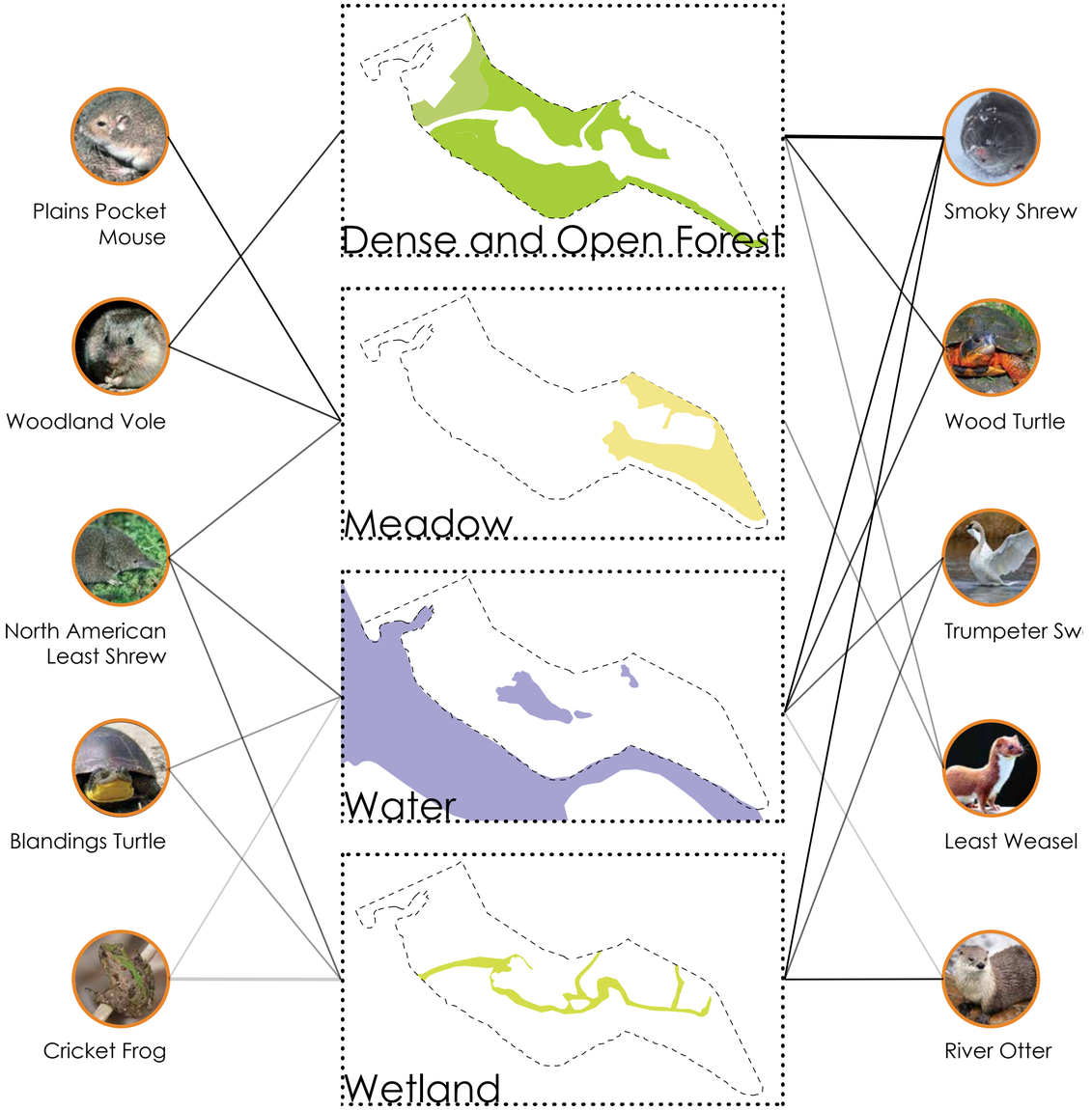



Woodland
Meadow
Wetland


Niche Species Zone




Edge Species Zone


Plains Pocket Mouse
Woodland Vole
North American Least Shrew
Blandings Turtle
Cricket Frog
Dense and Open Forest
Meadow
Water
Wetland
Smoky Shrew
Wood Turtle
Trumpeter Sw
Least Weasel
River Otter

Proposal | Planting Palette

Dense and Open Forest

Willow
Salix spp.

Honeylocust
Gleditsia triacanthos

Swamp white oak
Quercus bicolor

Cottonwood
Populus deltoides var. occidentalis

Box elder
Acer negundo

American elm
Ulmus americana

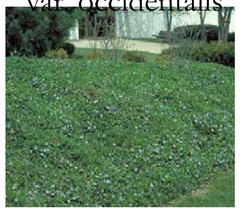
Balsam poplar
Populus balsamifera

Big-toothed aspen
Populus grandidentata

Blueberry
Muffin Hosta

Bracken Fern
Pteridium aquilinum

Canada Bluegrass
Poa compressa



Common Periwinkle
Vinca minor

Crown Vetch
Coronilla varia

Dwarf Astilbe
Astilbe chinensis var. pumila

European Wild Ginger
Asarum europaeum

Fernleaf Bleeding Heart
Dicentra eximia

Wetlands

New England Aster
Aster novae-angliae

Bushy Beard
Andropogon glomeratus

Sweetflag
Acorus americana

Big Blue Stem
Andropogon gerardii

Swamp Milkweed
Asclepias incarnata

Broomsedge
Andropogon virginicus

Water Plantain
Alisma plantago-aquatica

New York Aster
Aster novi-belgii

Meadow

Black Eyed Susan

American Bittersweet

Annual Rye Grass

Arctic Phlox

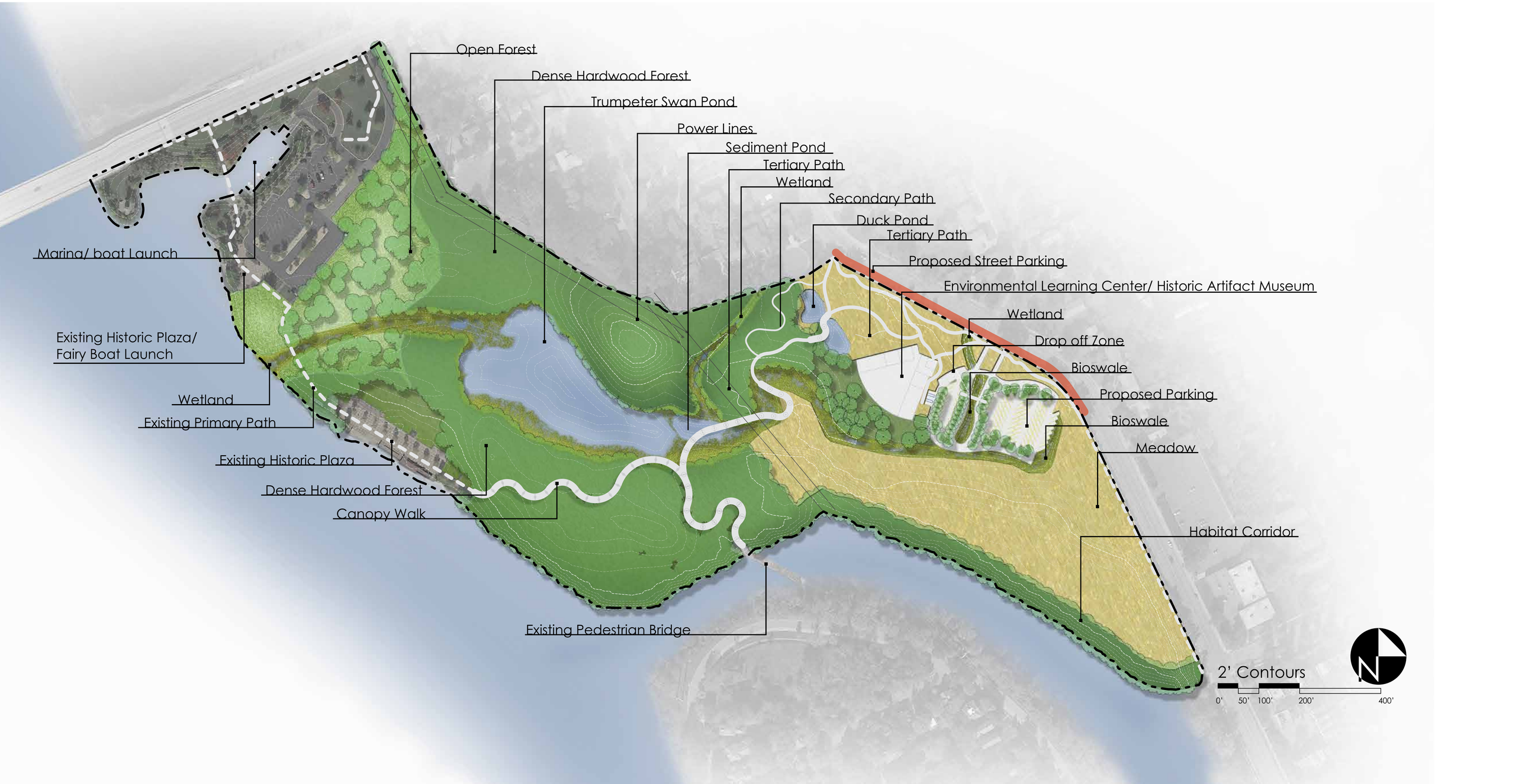
August Moon Hosta

Big Bluestem

Amber Wheels Blanket

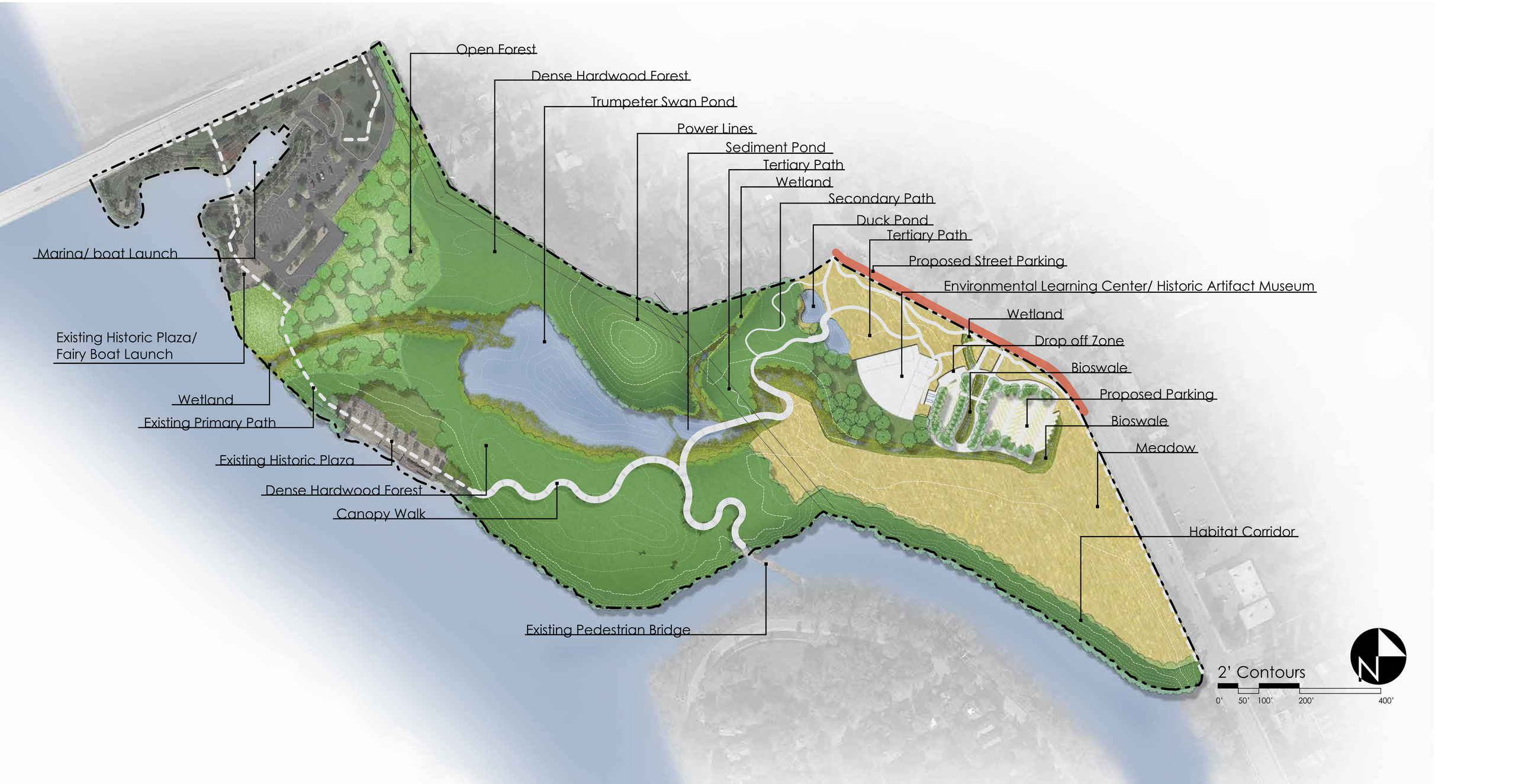
American Crandberryshrub

Proposal | Master plan




Exterior
Restrooms
Elevator
2nd Floor
Balcony
Historic Artifact Museum
Wood
Elevator
Restrooms
Vestibule
50 Student Classroom
Forest Conservatory
Limestone
50 Student Classroom
Event Hall
Wetland Conservatory
Spider Glass
1st Floor

Proposal | Master plan



Proposal | Bioswale/ Curb Cut Detail

Meadow allows views into site

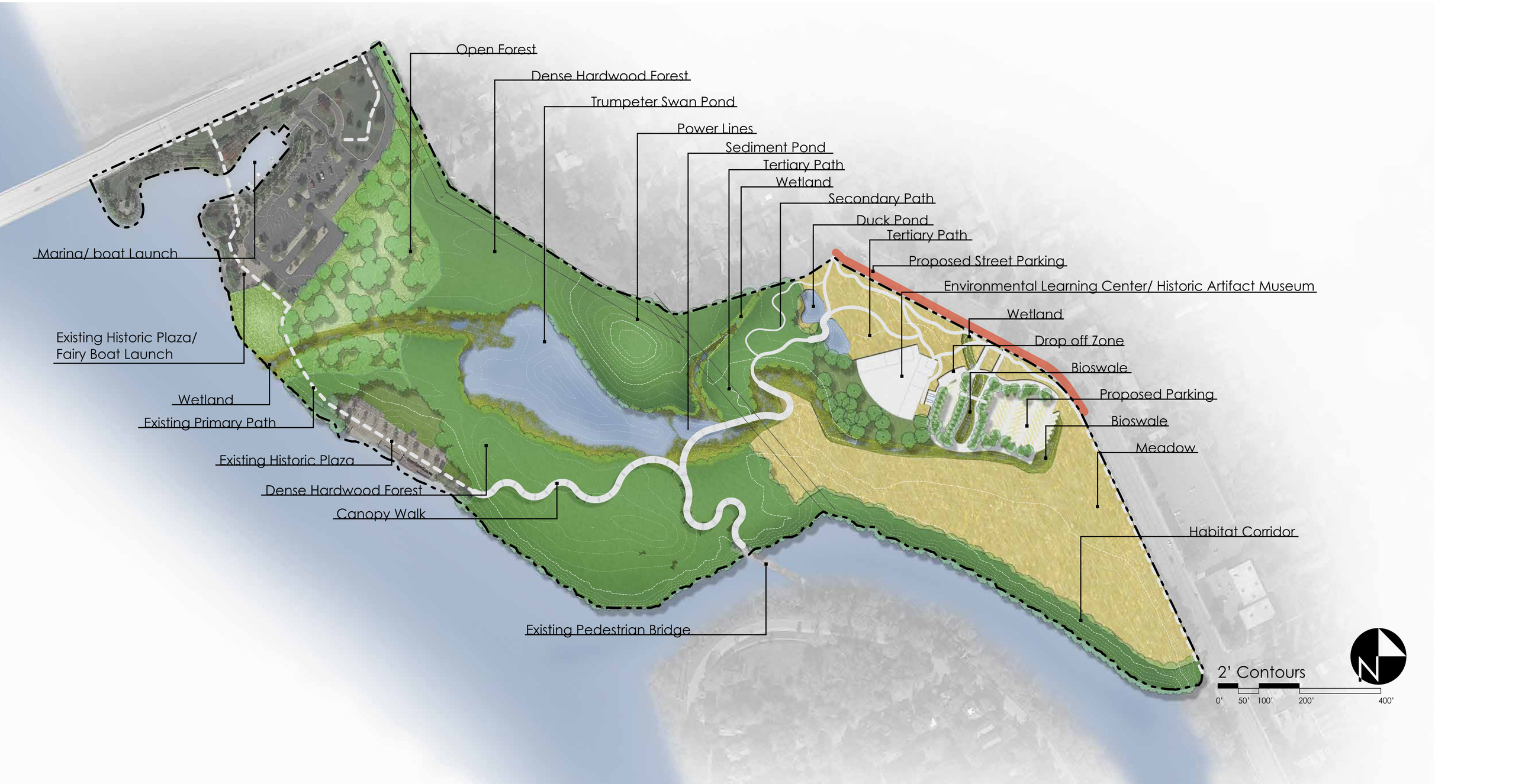
Pathways pass over wetland inlet

Curb cuts allow water to drain onto site and helps turtles leave and enter the site freely

Pathways pass over wetland inlet

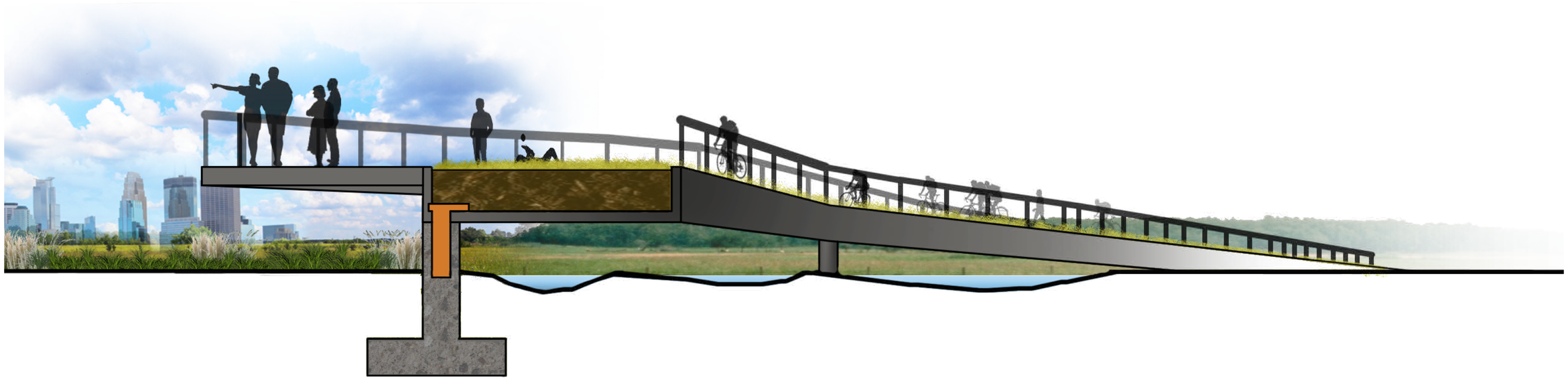
Storm water runoff drains onto site filtering through naturalistic wetlands

Proposal | Master plan



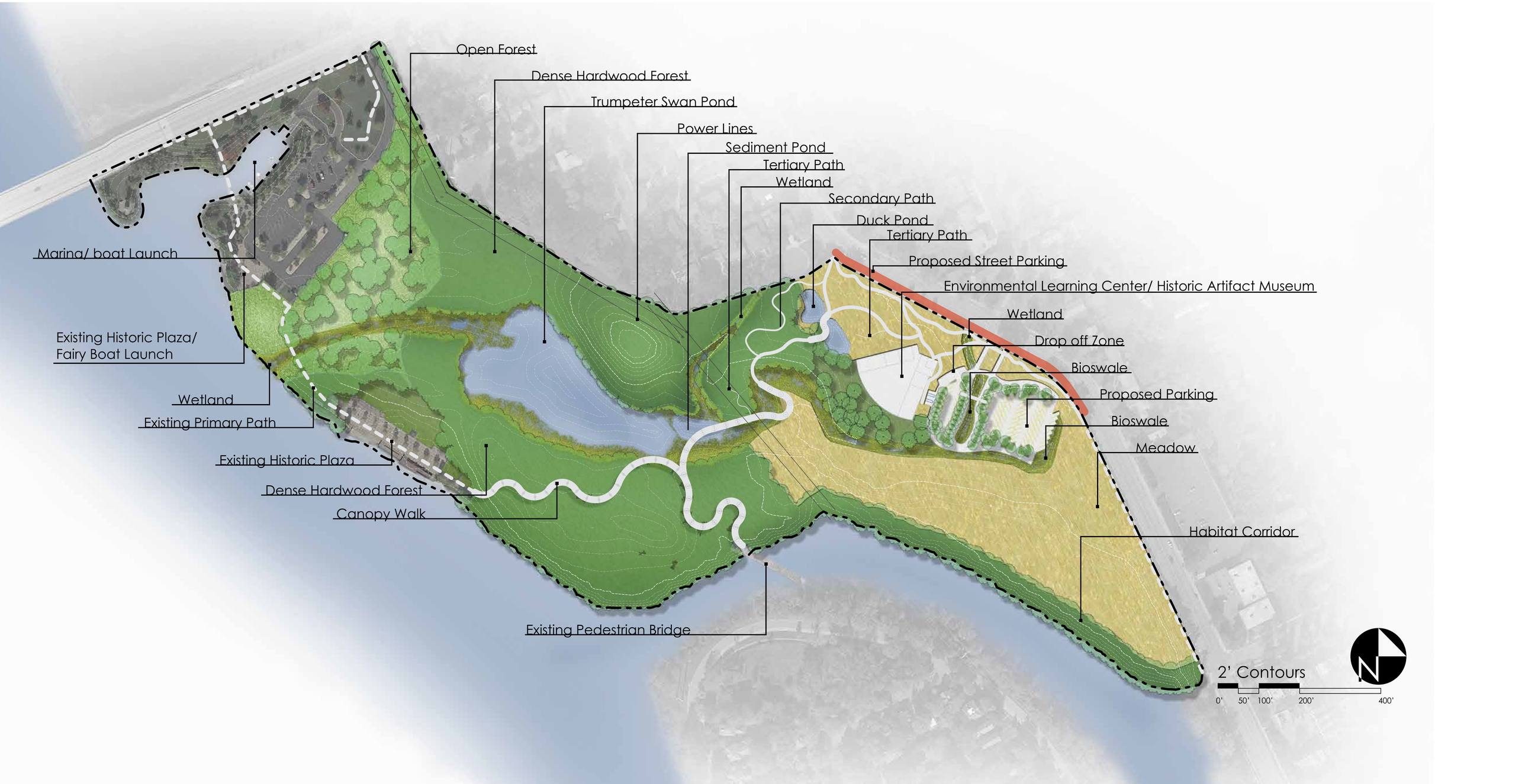
Proposal | Site Plan

Proposal | Meadow Lookout Section

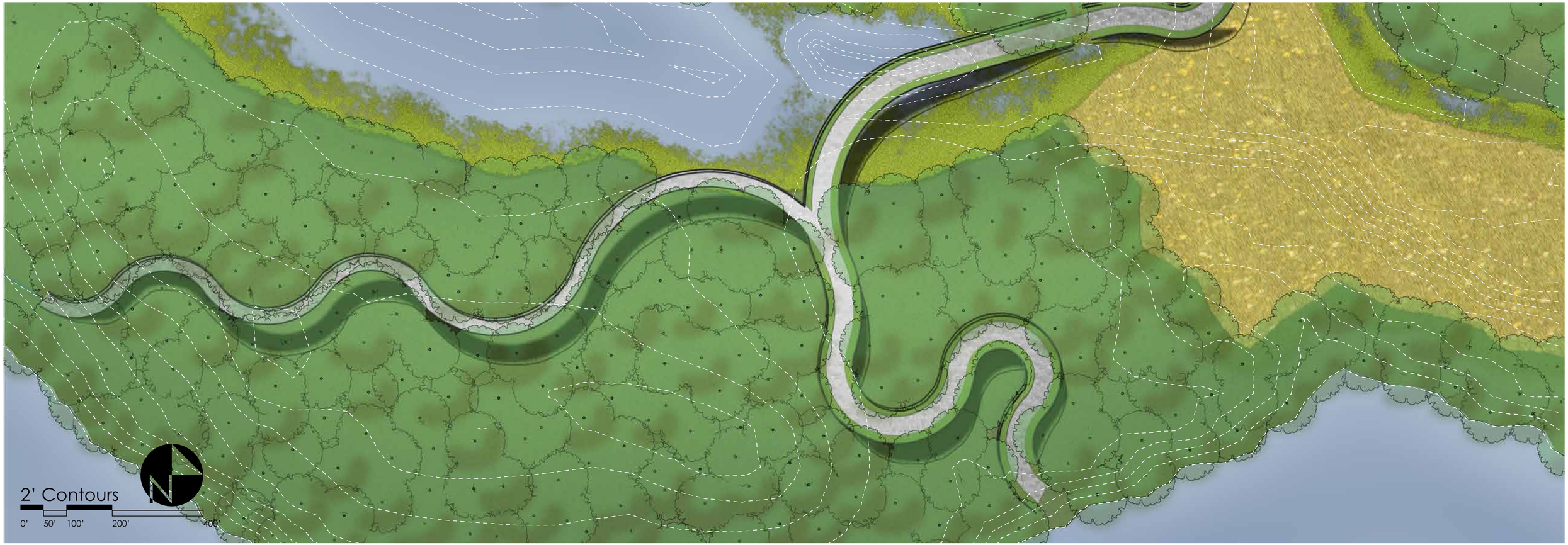


Proposal | Meadow Lookout Perspective

Proposal | Master plan



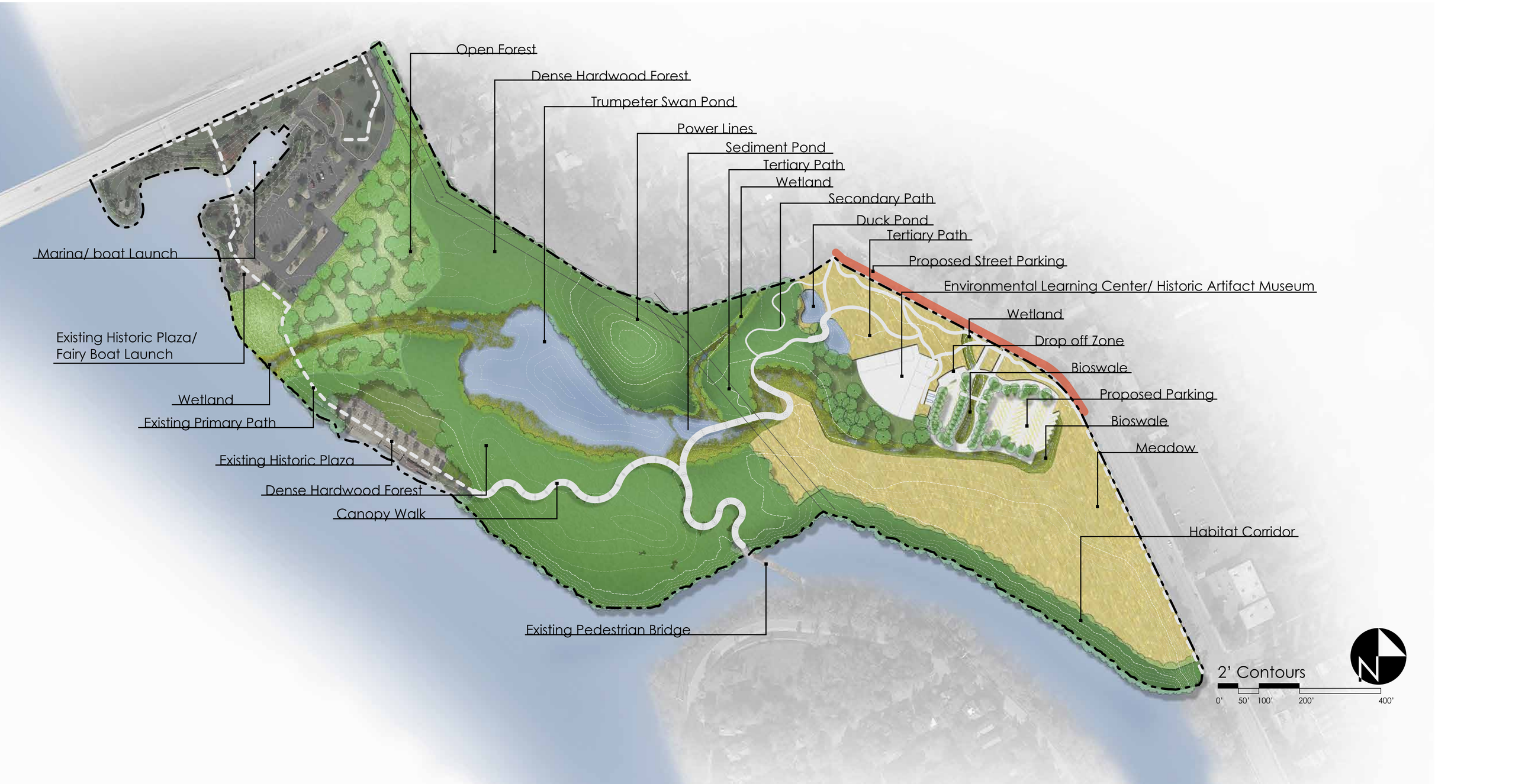
Proposal | Site Plan



Proposal | Pedestrian Bridge Section

Proposal | Pedestrian Bridge Perspective

Proposal | Master plan



Thank You